Working Paper No. 6

RAW MATERIALS IN THE UNITED STATES ECONOMY: 1900-1961

U.S. DEPARTMENT OF COMMERCE

Bureau of the Census

BUREAU OF THE CENSUS WORKING PAPER No. 6

RAW MATERIALS IN THE UNITED STATES ECONOMY: 1900-1961

By

Vivian Eberle Spencer

U.S. DEPARTMENT OF COMMERCE
Luther H. Hodges, Secretary

BUREAU OF THE CENSUS
Richard M. Scammon, Director

U.S. DEPARTMENT OF COMMERCE

BUREAU OF THE CENSUS

RICHARD M. SCAMMON, Director

A. ROSS ECKLER, Deputy Director
HOWARD C. GRIEVES, Assistant Director
CONRAD TAEUBER, Assistant Director
MORRIS H. HANSEN, Assistant Director for Research and Development
CHARLES B. LAWRENCE, Jr., Assistant Director for Operations
WALTER L. KEHRES, Assistant Director for Administration
JOSEPH F. DALY, Chief Mathematical Statistician
CALVERT L. DEDRICK, Chief, International Statistical Programs Office
JOHN BAKER, Public Information Officer

Industry Division
MAXWELL R. CONKLIN, Chief
OWEN C. GRETTON, Assistant Chief
VIVIAN EBERLE SPENCER, Chief, Minerals Branch

ACKNOWLEDGMENTS

Wilhemina F. Whiting of the Minerals Branch was in charge of most of the statistical work for this report.

Library of Congress Card No. A64-7003

SUGGESTED CITATION

U.S. Bureau of the Census. *Working Paper No. 6, Raw Materials in the United States Economy: 1900-1961.* Washington, D.C. 1963.

For sale by the Bureau of the Census, Washington, D.C., 20233 - Price $1.50

CONTENTS

Chapter Page

1 Background and Summary........ 1
  Orientation of This Report........ 1
  Some Significant Findings........ 2
  Definitions of Terms........ 3

2 Raw Materials Trends After 1950........ 5
  Trends in Production and Consumption........ 5
  Price Trends........ 7
  Production Per Employee........ 7

3 The Expanding Structure Supported by Raw Materials........ 8
  Relative Expansion of the Processing and Fabricating Industries........ 8
  Making Raw Materials Go Further........ 8

4 Changes in Relative Importance and Location of Raw Materials Industries........ 12
  Raw Materials Production........ 12
  Effect on Regional Development........ 12

5 The Pattern of Raw Materials Use........ 20
  Classifications of Raw Materials Use........ 20
  The Expanding Role of the Energy Materials........ 22
  Use of One Material Instead of Another and the Development of Synthetics........ 23

6 Foreign Trade in Raw Materials........ 27
  Net Imports, National Security, and Interdependence of Nations........ 27
  Increasing Use of Imported Materials........ 27

7 Raw Materials Prices........ 31
  Raw Materials Prices Related to All Wholesale and Finished Commodities Prices........ 31
  Prices Related to Personal Income in the Raw Materials Industries........ 32
  Prices Related to the Kinds of Raw Materials Consumed and Productivity........ 35

8 Productivity in Raw Materials Production........ 37
  Factors Contributing to Productivity in the Mineral Industries........ 38
  Factors Contributing to Productivity in Agriculture........ 45
  Regional Differences in Productivity........ 46
  An Index of Productivity of Labor and Capital........ 48

9 Trends in Agricultural Products........ 50
  Crops Production and Consumption........ 50
  Livestock Production and Consumption........ 55
  Agricultural Imports and Exports........ 55
  Changing Farm Characteristics........ 56
  Prices of Domestic and Imported Agricultural Products........ 59

10 Trends in Fishery, Wildlife, and Forest Products........ 60
  Fishery and Wildlife Products........ 60
  Forest Products........ 60

11 Trends in Mineral Products........ 63
  Metallic Ores Production and Consumption........ 64
  Impact of Secondary Metals........ 65
  Metal Ores Prices........ 67
  Mineral Fuels........ 68
  Mineral Construction Materials........ 71
  Other nonmetallic Minerals........ 72

12 Significance for the Future........ 73

CONTENTS

APPENDIXES

Appendix		Page
A	The Measures of Raw Materials Production, Imports, Exports, and Consumption and Methods of Construction	81
	General Methods Employed	81
	Scope of the Series	81
	Sources of Data Used	81
	Agricultural Materials	82
	Fishery and Wildlife Products	83
	Forest Products	84
	Minerals	84
	Raw Materials Consumption, by End Use	86
	Further Refinements	86
B	The Raw Materials Price Indexes	121
	General Methods Employed	121
	Type and Sources of Data Used	121
	Scope of the Series	122
	Effect of Changing Weight Base	122
	Comparative Price Indexes for All Wholesale Commodities and Finished Commodities	123
C	Energy Used and Other Input Requirements for the Mineral and Manufacturing Industries	131

CHARTS

Chart		
1	Raw Materials Consumption in the United States, by Detailed Groups: Average 1957-1961	4
2	Some Raw Materials Trends in the United States: 1951-1961	6
3	Persons Engaged and Production of Raw Materials in the United States: 1900-1960	9
4	Production of Raw Materials in the United States: 1900-1961	13
5	Distribution of Raw Materials Employment, by Geographic Divisions: 1958	18
6	Consumption of Raw Materials in the United States: 1900-1961	21
7	Fuels and Electric Energy Used, Employment, and Value Added in the United States, by Major Industry Groups: 1958	24
8	Average Annual Gross Imports and Exports of Raw Materials for the United States: 1900-1961	30
9	Price Indexes for Raw Materials, Finished Commodities, and all Wholesale Commodities in the United States: 1900-1961	33
10	Price Changes for Raw Materials Groups in Selected Periods for the United States from 1900 to 1961	36
11	Indexes of Fuels and Electric Energy Use, Employment, and Production in the United States, by Major Industry Groups: 1939, 1947, 1954, and 1958	41
12	Indexes of Production Per Employee, Production Per Horsepower, and "Productivity" in the United States, by Major Industry Groups: 1939 and 1954	49
13	Production and Consumption of Agricultural Materials in the United States, by Detailed Groups for Selected Periods: 1900-1961	52
14	Production and Apparent Consumption of Metallic Minerals in the United States: 1960	66
15	United States Population, 1900-1980, and Consumption of Raw Materials, 1900-1961	74
16	Per Capita Consumption of Raw Materials in the United States, 1900-1961, and Conjectures for 1970 and 1980	78

TABLES

Table		
1	Experienced Civilian Labor Force Engaged in Raw Materials and Other Industries in the United States, Total and Percent Distribution: 1820-1960	10
2	Income Produced and Persons Engaged in Production for Raw Materials and all Other Industries in the United States, Totals and Percent Distribution: 1929, 1940, 1950, and 1960	11
3	Percent Distribution of Production and Apparent Consumption of Raw Materials in the United States, by Broad Product Groups: 10-Year Periods, 1900-1959, and for 1960 and 1961	15
4	Average Annual Production, Imports, Exports, and Apparent Consumption of Raw Materials in the United States, by Broad Product Groups, for 5-Year Periods, 1900-1959, and for 1960 and 1961	16
5	Percent Distribution of Employment in the Raw Materials Industries in the United States, by Geographic Divisions: Selected Years, 1900–1958	19
6	Foods, Energy Materials, and Physical-Structure Materials as Percentages of All Raw Materials Consumed in the United States: 1900-1961	20

TABLES--Continued

Table		Page
7	Percent Distribution of Energy Use for all Purposes in the United States by Major Uses: 1929, 1939, 1947, and 1954	22
8	Percent Distribution of Energy Use by Mineral and Selected Manufacturing Industry Groups for the United States: 1939, 1947, 1954, and 1958	23
9	Approximate Inputs into Raw Cotton and Cellulosic Man-Made Fibers Production in the United States: 1958	26
10	Average Annual Imports and Exports of Crude and Manufactured Products for the United States: 1820-1961	28
11	Net Imports of Raw Materials as Percentages of Domestic Consumption for the United States: Decade Averages 1900-1959 and 1960 and 1961	29
12	Price Indexes for all Wholesale Commodities, Finished Commodities, and Raw Materials in the United States: 5-Year Periods and Selected Years, 1900-1961	31
13	Price Indexes for Finished Commodities and Raw Materials Relative to all Wholesale Prices in the United States: 5-Year Periods and Selected Years, 1900-1961	32
14	Average Income From Personal Employment, for Industry Groups and Selected Industries in the United States 1961 and Percent Increases From 1929 and 1951	34
15	Changes in Output Per Unit of Labor Input, Output Per Unit of Capital Input, and Factor Productivity for the National Economy, Agriculture, Mineral Industries, and Manufacturing Industries: Selected Periods 1899-1957	37
16	Production Per Person Engaged and Production Per Man-Hour for all Industries, Agriculture, Forestry, and Mineral Industry Groups in the United States: 1939, 1954, and 1958	39
17	Some Factors Contributing to Varying Productivity in Mineral Industries, by Industry Groups, and for all Manufacturing Industries in the United States: Selected Census Years 1899-1958	40
18	Some Factors Relating to Varying Productivity in Agriculture in the United States: Selected Years, 1910-1961	45
19	Distribution of Output Per Man-Hour or Man-Day for the Raw Materials Industries in the United States, by Geographic Division: Selected Periods	46
20	Some Factors Contributing to Varying Productivity in the Mineral Industries in the United States, by Geographic Divisions: 1939, 1954, and 1958	47
21	Percent Distribution of Agricultural Production and Consumption in the United States by Commodity Groups, for Selected Periods: 1900-1961	51
22	Average Annual Agricultural Production and Consumption in the United States by Commodity Groups, for Selected Periods: 1900-1961	54
23	Average Annual Imports and Exports of Agricultural Products for the United States, for Selected Periods: 1900 -1961	55
24	Size of Farms, Use of Farmland, Production Per Acre, and Number of Farm Family and Hired Workers in the United States (Excluding Alaska and Hawaii): Selected Years 1900-1959	57
25	Percent Distribution of Man-Hours Used for Farmwork by Commodity Group for Selected Periods: 1910-1954	58
26	Indexes of Prices of Domestic and Imported Agricultural Materials, Relative to all Wholesale Prices, for 5-Year Periods 1900-1959 and for 1960 and 1961	59
27	Forest Resources of North America: 1953	62
28	Mortality and Growth Loss in Growing Stock on Commercial Forest Land in the United States and Coastal Alaska, by Causes: 1952	62
29	Percent Distribution of Consumption of Physical-Structure Materials in the United States: 10-Year Periods, 1900-1959, and for 1960 and 1961	63
30	Percent Distribution of Production and Apparent Consumption of Metallic Ores in the United States: 10-Year Periods, 1900-1959, and for 1960 and 1961	65
31	Net Imports of Metallic Materials as Percents of Total United States Consumption: 10-Year Periods, 1900-1959, and for 1960 and 1961	65
32	Primary and Secondary Production of Nonferrous Metals, Except Precious Metals and Uranium: 5-Year Periods, 1910-1959, and for 1960 and 1961	67
33	Indexes of Prices of Principally Domestic and Principally Foreign Metallic Minerals Relative to all Wholesale Prices: 5-Year Periods, 1900–1959, and for 1960 and 1961	68
34	Percent Distribution of Consumption of Energy in the United States Measured in 1954 Dollars at Point of Production, by Source of Energy: 10-Year Periods, 1900-1959, and for 1960 and 1961	69
35	Percent Distribution of Consumption of Energy in the United States Measured in Kilowatt-Hour Equivalents, by Source of Energy: 10-Year Periods, 1900-1959, and for 1960 and 1961	69
36	Indexes of Prices of Mineral Fuels, Relative to all Wholesale Prices: 5-Year Periods, 1900-1959, and for 1960 and 1961	70
37	Unit Values at Point of Production and Unit Costs to Manufacturing Establishments for Energy, by Source: 1947, 1954, and 1958	71
38	Population and Per Capita Consumption of Raw Materials in the United States, by Broad Use Classes: 1900-1961	75

CONTENTS

APPENDIX TABLES

Table		Page
A1	Raw Materials Production in the United States in Constant 1954 Dollars, by Broad Product Groups: 1900-1961	88
A2	Raw Materials Imports Into the United States in Constant 1954 Dollars, by Broad Product Groups: 1900-1961	90
A3	Raw Materials Exports From the United States in Constant 1954 Dollars, by Broad Product Groups: 1900-1961	92
A4	Raw Materials Apparent Consumption in the United States in Constant 1954 Dollars, by Broad Product Groups: 1900-1961	94
A5	Raw Materials Apparent Consumption in the United States in Constant 1954 Dollars, by Broad Use Classes: 1900-1961	96
A6	Raw Materials Production in the United States in Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961	98
A7	Raw Materials Imports Into the United States in Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961	100
A8	Raw Materials Exports From the United States in Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961	102
A9	Raw Materials Apparent Consumption in the United States in Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961	104
A10	Consumption of Crops and Livestock in the United States in Constant 1954 Dollars, by Food and Nonfood Use: 1924-1961	106
A11	Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961	107
A12	Primary and Secondary Production of Nonferrous Metals, Except Precious Metals and Uranium, in Constant 1954 Dollars: 1910-1961	118
A13	Adjustment Series for Agricultural Production; Agricultural Products Used for Feed and Seed and Net Imports of Cattle and Hogs in Constant 1954 Dollars: 1924-1961	119
B1	Indexes of Raw Materials Prices: 1900-1961	124
B2	Raw Materials Represented in the Price Indexes	126
B3	Domestic Agricultural Products Included in the Price Indexes	128
B4	Comparison of Segment Price Indexes at the Splicing Points	129
B5	Comparison of Changing Weight and Constant Weight Price Indexes for Selected Years	130
C1	Fuels and Electric Energy Used for Power or Heat in the Mineral and Manufacturing Industries, by Source of Energy, Census Years 1909-1958, and by Major Industry Groups, Census Years 1939-1958	133
C2	Indexes of Fuels and Electric Energy Use, Employment, and Production for the Mineral and Manufacturing Industries, by Major Industry Groups: Census Years 1939-1958	136
C3	Indexes of Production Per Employee, Production Per Horsepower, and Productivity for Agriculture, Mineral, and Manufacturing Industries, by Major Industry Groups: 1954	138
C4	Consumption of Energy in the United States Measured in Billion Kilowatt-Hour Equivalents, by Source of Energy: 1900-1961	139

Chapter 1.--BACKGROUND AND SUMMARY

Access to raw materials has been one of the great forces which has motivated the migrations and clashes of peoples from the beginnings of recorded history. Yet by present United States standards, the aggregate materials requirements of previous generations seem meager indeed. Since 1900, raw materials consumption in the United States has more than tripled, and per capita consumption has increased by about 31 percent.

Raw materials requirements, moreover, have expanded most rapidly for items potentially the hardest to supply. Per capita consumption of minerals (except gold) was more than three times as large in 1961 as it was at the beginning of the 20th century, whereas the consumption of agricultural materials per person increased by less than 13 percent, and per capita consumption of forest products was reduced by one-half. These changes resulted in the expansion of minerals consumption from 18 to 35 percent of the raw materials total between the first and last decades of the period 1900-1961.

Significant commercial dependence on foreign raw materials became a new factor in the national economy during this period. In the years 1900-1909, there was a net export balance for all raw materials averaging 5 percent of domestic consumption. By 1952-1961, this had changed to a net import balance amounting to 9 percent of consumption. A similar change in trade balance was shown for mineral fuels, but for all other minerals (except gold) a net import balance of 7 percent of consumption in the first decade of the present century had increased to 27 percent by 1952-1961.

These changes in the raw materials base of our economy have been accelerated by two world wars and the cold war. They are of fundamental importance in planning for national defense, as well as for the assurance of a healthy economic life. Nevertheless, studies in the last decade have reduced the urgent concern over depletable raw materials. "Technological progress is represented as augmenting the supply of the services of land and other natural resources about as rapidly as it augments the demand for these services at real prices not markedly different from those prevailing somewhat earlier."[1]

ORIENTATION OF THIS REPORT

Concern for adequate raw materials has led to increasing emphasis on raw materials problems. Various studies of these problems have been made for defense and other purposes. In order to focus attention on the long-range rather than on the short-range materials situation, a President's Materials Policy Commission was established early in 1951 under the chairmanship of W. S. Paley. In June 1952, it issued the five-volume report, Resources for Freedom, which included a wealth of statistical, technological, and economic studies as background for the recommendations of the Commission.

Among the statistical materials developed in this Paley report were measures of raw materials production, consumption, and net exports for each year of the period 1900-1950. The measures represented the aggregate value of raw materials at the point of production in terms of constant 1935-1939 dollars. Separate totals were shown for 19 major groups or subgroups of raw materials, with further details shown for 20 metallic minerals and 7 energy sources.

The Bureau of the Census was asked by the Executive Director of the Paley Commission to take the responsibility of keeping these measures up to date and revising them when necessary. Requests were also received for gross figures on imports and exports of raw materials.

As a consequence of these requests, in 1954, the Bureau of the Census Working Paper No. 1, Raw Materials in the United States Economy: 1900-1952, by Vivian Eberle Spencer of the Bureau of the Census and Charles A. R. Wardwell of the Office of Business Economics was issued as a preliminary report. This report included revised annual production and consumption measures similar to those constructed for the Commission. These measures covered the period 1900-1950 and were more precise and somewhat more comprehensive than the earlier statistics. In addition, this report presented comparable 1951 and 1952 figures. Gross imports and exports were shown for the first time. As before, raw materials were classified by the industry in which they are primarily produced, but the report also presented a new classification of raw materials on the basis of the major purposes for which they are used: For foods, energy materials, or physical-structure materials. Another feature, available for the first time in this report, was annual price series at the raw-materials level, which were constructed on a basis comparable to the consumption series. Many analytical tables and considerable background material intended to orient the significance of these basic raw materials figures were also presented.

---

[1] Spengler, Joseph J., "Natural Resources and Economic Growth" papers presented at a conference in 1960 under sponsorship of Resources for the Future, Inc. and Committee on Economic Growth of the Social Science Research Council, p. 277.

This 1954 report was intended primarily for comment and discussion and only a limited edition of 500 copies was issued. A great deal of interest was expressed in this report, both by users in the United States and in various foreign countries. Many valuable comments and suggestions regarding the report were received and the authors were urged to republish it to satisfy a continuing demand. They were also urged to keep the statistics up to date. However, it did not seem desirable to republish the report without making use of the suggestions received. The pressure of other work, particularly on the 1954 and 1958 Censuses of Mineral Industries, made it impossible for the authors to prepare a revised edition at that time. Meanwhile, in order to partially satisfy the demands for current statistics, some of the broad summary figures for production, imports, exports, and consumption have been published for the period 1953-1960 in the Statistical Abstract of the United States and in Historical Statistics of the United States. Drafts of the revised appendixes A and B have been made available to a number of users who had particular need for the material.

The present report represents in general design a publication of the above postponed report, and parts of the text, tables, and charts are identical with those included in Working Paper No. 1. However, extensive revisions and refinements have been made in the basic statistical series previously presented. The series have been extended to cover the years 1953 through 1961. Advantage has been taken of the availability of (1) the 1954 Census of Mineral Industries to yield a more up-to-date weight base and (2) the U.S. Department of Agriculture's new measures of supply and utilization of farm commodities to give much more precise agriculture figures and to eliminate some inherent duplications in the original series. This report also includes, in appendixes A and B, details on production, imports, exports, consumption, and price measures for more detailed groups of commodities. The broad group series for production, imports, exports, and consumption are presented both in terms of 1954 and 1935-1939 average dollars, although the text discussion and the more detailed statistics are in terms of 1954 dollars only. The price indexes have been revised to make them more closely comparable to the physical volume measures. Moreover, while the new price series are shown on a 1954 index base, they have been revised to use changing consumption weight bases for the four periods: 1905-1909, 1920-1924, 1935-1939, and 1950-1954. Much of the text and many of the text tables are closely similar to those of Working Paper No. 1. However, the present report includes many new tables and charts, a new chapter on Productivity in Raw Materials Production, and an appendix C which provides measures of energy, labor, and other inputs to production and includes indicators of "productivity" trends in the mineral, forest products, and other industries based primarily on the 1954, 1958, and earlier censuses of mineral industries and manufactures. As in the earlier report, the text does not attempt to discuss all aspects of raw materials problems, but rather to provide some comment on important factors which will place the new statistics in suitable perspective.

SOME SIGNIFICANT FINDINGS

The initial paragraphs of this chapter have indicated some aspects of the national raw materials pattern upon which future chapters will expand. What are some of the other significant facts about our economy which are indicated by these new materials figures?

1. While total raw materials consumption has more than tripled since 1900, measured in terms of end use, it is the energy segment of our raw materials base which has expanded most, from less than 16 percent of all raw materials in 1900-1909 to over 25 percent of the total in 1952-1961. Between the same periods, foods declined from 59 to 50 percent of the total, while physical-structure materials remained at about 25 percent of all materials throughout most of the six decades. During depression periods, however, the percentage for foods was significantly higher -- primarily at the expense of physical-structure materials.

2. The raw materials base is supporting a more and more elaborate economic structure, with increased fabrication and reuse making raw materials go much further to supply end-use products and services. Gross national product amounted to nearly nine times the aggregate of raw materials consumed in 1961, compared to four times this aggregate in 1900. Concurrently, civilian labor force engaged in raw materials industries declined from 42 percent of all workers in 1900 to 8 percent in 1960.

3. While there are pitfalls in making long-term price comparisons, raw materials prices rose substantially more (the indexes show over 70 percent more) than all wholesale prices and prices of finished commodities between the first and sixth decades of this century. Nevertheless, after 1951, this trend was reversed and while wholesale and finished commodities prices continued to rise, raw materials prices declined. For the major segments of raw materials, the price rises between 1900-1909 and 1952-1961, were as follows: For agricultural products, 217 percent; for forest products, 608 percent; and for minerals (except gold), 264 percent. The Bureau of Labor Statistics (BLS) shows an increase of 193 percent for all wholesale prices and 188 percent for finished commodities for the same period.

4. In the years after 1950, consumption of raw materials continued to expand, amounting to 18 percent between 1950 and the 1960-1961 average. For the minerals segment, the increase was even greater, amounting to 27 percent in the same period; whereas for agricultural materials the increase was only 15 percent, and for fishery, wildlife, and forest products combined, only 4 percent. During the period 1950 to

1960-1961, the increases in domestic production of raw materials more than kept pace with these increases in consumption, production of all raw materials increasing by 24 percent. Production of minerals increased by 25 percent, production of agricultural materials by 26 percent, while production of fishery, wildlife, and forest products combined was about the same in 1950 as in 1960-1961. Net imports of all raw materials, which amounted to 10 percent of consumption in 1950, declined to 7 percent in the 1960-1961 period, net import ratios increasing for minerals but decreasing for agricultural materials. The price indexes for all raw materials in the 1950-1961 period increased less than all wholesale commodities. This reflected primarily a decline in prices of agricultural materials, the price of minerals and forest products moving more parallel to those of all wholesale commodities.

5. Production per person engaged in the raw materials industries which had doubled between 1900 and 1940, increased by two-thirds between 1940 and 1950, then nearly doubled again between 1950 and 1960.

Many of these relationships are quite different for individual materials, or competitive groups of materials. These more detailed stories are the subject of succeeding chapters.

DEFINITIONS OF TERMS

Before proceeding further, the use of certain phrases needs to be clarified. "Raw materials" as the term is used in this study refers to the products of the primary stage of production. Thus iron ore is a raw material while pig iron is a semifabricated product, similarly, sawlogs and pulpwood are raw materials while lumber and wood pulp are semifabricated materials.

The "raw materials industries" are those which perform the first step of extracting natural resources in crude or semicrude form. They include farming, forestry and logging, fishing and trapping, and the development and operation of mines, quarries, and wells, together with the concentration or preparation of crude minerals which is usually performed before they are marketed. The processing of food products is excluded, such as canning, flour milling, or meat packing; also excluded is the production of wood pulp, the making of finished lumber products, the conversion of mineral fuels in petroleum refineries and coke ovens, the smelting of metallic ores, and the production of cement or lime from limestone.

Raw materials consumption, or "apparent consumption," is, in general, derived as production plus imports minus exports of raw materials. An adjustment for changes in stocks has been made only for the types of farm commodities which are produced in the United States, and this only for the period 1924-1961. Adjustments for stock changes in other areas and for these farm commodities in other years were not made because of difficulties in developing adequate stock series. In "apparent consumption," raw materials are treated as though they were consumed in the same year in which they were produced or imported. For such materials, actual consumption is overstated for a year in which raw materials inventories are being accumulated and understated for a year in which these inventories are being liquidated.

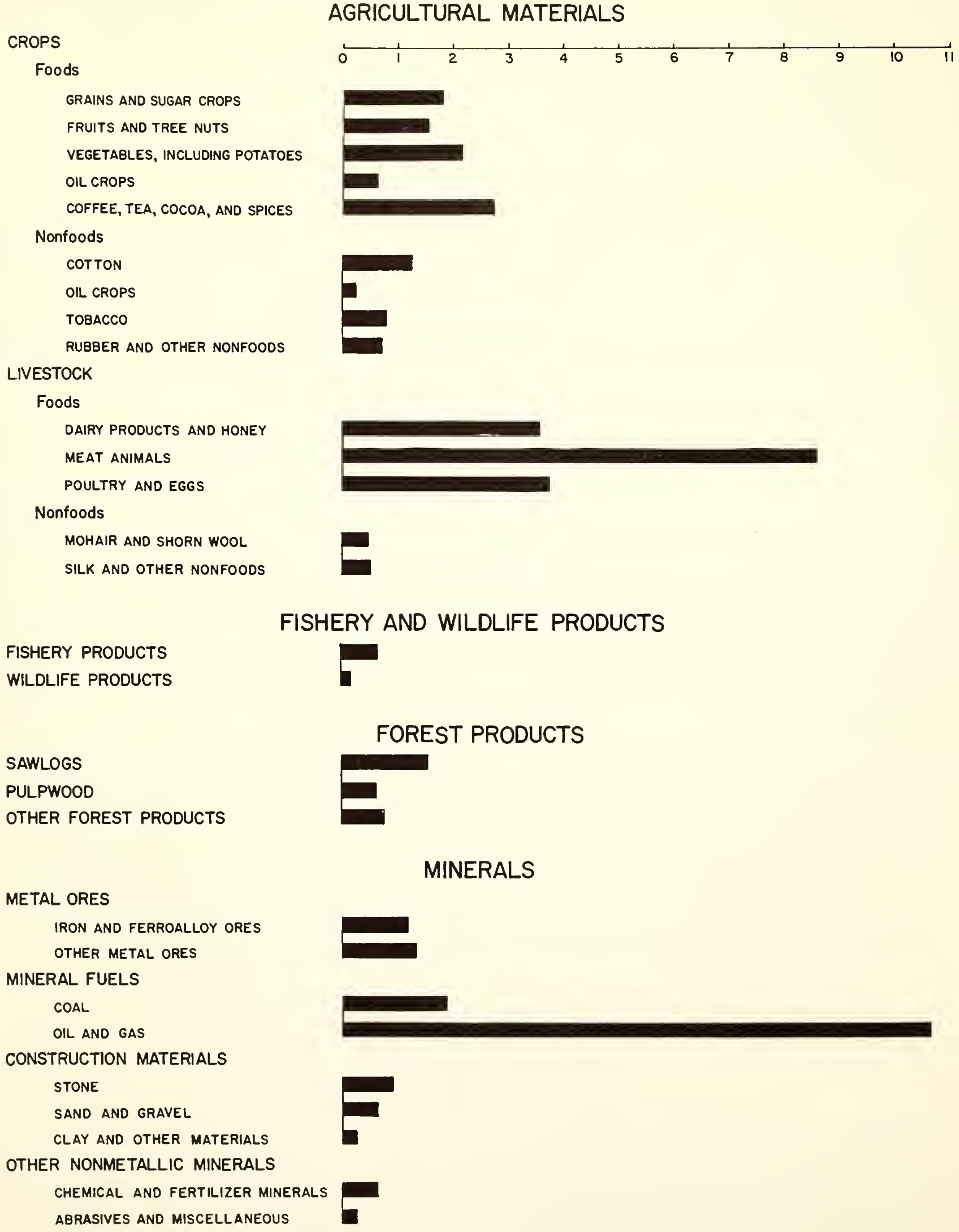
The raw materials consumption figures approximate raw materials requirements for the end-use products consumed in the United States in the given year. The raw materials equivalents of imported, or exported, semifabricated and fabricated products were estimated and included, insofar as feasible. Such estimates affected the results most significantly for certain metallic materials, chemical materials, and forest products.

The consumption figures for each year represent first consumption in the United States; figures for consumption of domestic scrap are not included in the basic series.

The specific raw materials included under each classification are indicated in the text of appendix A and in tables B2 and B3 of appendix B. See also chart 1.

CHART I-RAW MATERIALS CONSUMPTION IN THE UNITED STATES, BY DETAILED GROUPS: AVERAGE 1957-1961

(In billions of 1954 dollors)



U. S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Chapter 2.--RAW MATERIALS TRENDS AFTER 1950

With the exception of foods, the United States consumes more raw materials each year than any other country in the world. In the case of certain materials the United States in some years has consumed one-half, or even more, of the free world's total annual output. Nevertheless, the Nation's portion of total consumption has decreased in recent years.

For example, in 1950 the United States consumed the following portions of the free world's total output: Natural rubber, 39 percent; iron production, 54 percent; new copper production, 55 percent; new lead production, 64 percent; new zinc production, 56 percent; and petroleum and its products, 65 percent. By 1961, these percentages had decreased to 20 percent for rubber, 31 percent for iron, 29 percent for copper, 36 percent for lead, 35 percent for zinc, and 49 percent for petroleum products.

Such high consumption rates, required by our rising standard of living and growing population, impose a heavy drain on natural resources. They raise questions as to the adequacy of these resources to continue meeting such demands. Prior to the beginning of the present century, the popular impression prevailed in this country that our natural resources were practically inexhaustible. Recent world conflicts focused attention on the Nation's diminishing reserves of nonreproducible materials and on the interdependence of the free world countries.

Developments on the supply side, on the other hand, make it quite clear that the Nation's productive capacity for raw materials has also grown rapidly. Rising requirements for materials may not necessitate a correspondingly increased drain on scarce domestic or world supplies. The continually multiplying feats of technology often make it possible to substitute for a scarce material a more abundant natural material or a synthetic material. Much of the increased production has involved increased fabrication, not greater use of materials. Moreover, reuse of materials permits them to go further and further. Thus the relative urgency of demands for specific materials is reduced and the demand patterns for these materials are significantly altered over time.

TRENDS IN PRODUCTION AND CONSUMPTION

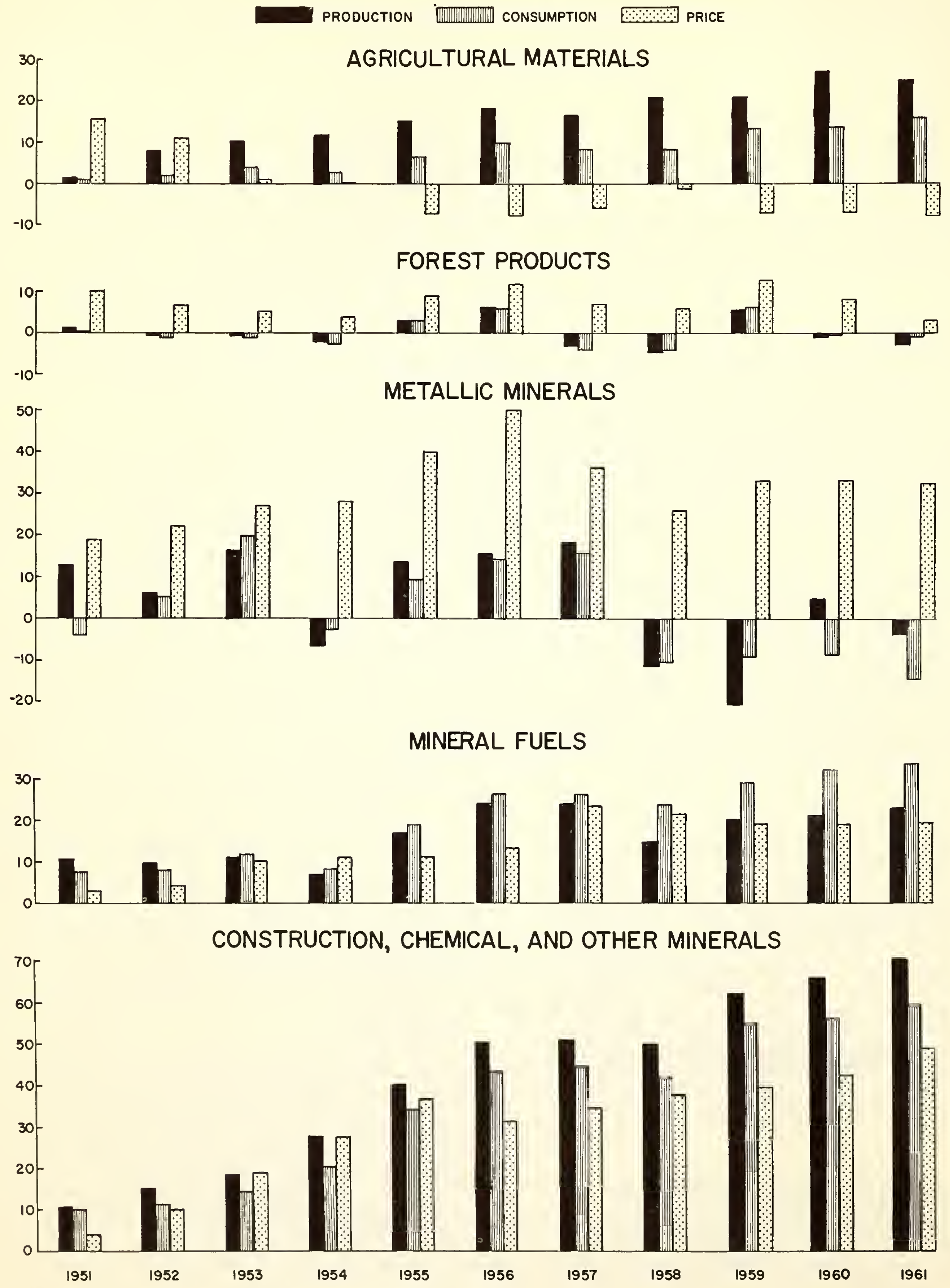
The combined capital equipment and defense-goods boom that developed progressively through the early 1950's required unprecedentedly large quantities of raw materials. These materials were forthcoming primarily from rising domestic output, supplemented by a continuing high balance of net imports. Domestic raw materials output and consumption continued to rise from 1950 to 1961 (see chart 2), but at a slightly slower rate than during the preceding decade. The average annual rate of increase in production from 1950 through 1961 was 1.9 percent, as compared with 2.2 percent for 1940-1950, and with 0.8 percent for 1920-1930. Nevertheless, for crops the average annual rate increased from 1.7 percent for the period 1940-1950 to 2.3 percent for the period 1950-1961, and for mineral construction materials the rate increased from 5.9 percent to 7.3 percent in the same two periods.

Prior to the mid-1950's, raw materials consumption expanded faster than domestic materials output. Raw materials net imports, which had accounted for 7.0 percent of all materials consumption during the war years of 1942 through 1945, contributed 8.2 percent to domestic consumption in the period 1946-1950 and 9.4 percent in the period 1951-1955. Raw materials net imports dropped to 8.3 percent for 1956-1960 and to 7.5 percent for 1961. For agricultural materials net imports declined throughout the 1950-1961 period. The most pronounced increase in dependence on foreign sources has been in the metallic materials. The iron and ferroalloy group showed the most rapid recent increase in net imports, averaging 39 percent of domestic consumption in the years 1950 through 1961, compared with 23 percent in the preceding decade, and 14 percent in the 1920's. This increase for the 1950-1961 period reflects the decline in exports of defense materials, for which the iron ore equivalent is included, as well as the significant increase in imports of iron and ferroalloy ores. Net imports of other nonferrous metal ores (except gold) constitute an even higher proportion of domestic consumption--approximately one-half in the last decade--but this inflow has grown less rapidly in the last two decades. Our former export surplus of these metals began to yield place to net imports immediately after the First World War.

The consumption pattern of the last decade has stressed durable goods for defense, for capital equipment, and also for personal consumption. Accordingly, metals (except gold) accounted for an increasing proportion of all raw materials consumed, 5.9 percent in the last 12 years covered in this report as compared with 5.3 percent during the preceding decade. The mineral construction materials group has been one of the fastest growing major groups of materials consumed in recent years, averaging 3.1 percent of all materials in the years 1950-1961 as against 1.9 percent in the period of 1940-1949. Saw-

CHART 2.-SOME RAW MATERIALS TRENDS IN THE UNITED STATES: 1951-1961

(Figures for 1951 through 1961 expressed as percent increases over those for 1950)



U. S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

log consumption, however, remained a relatively constant proportion of all materials consumption in these two periods. Chemical materials consumption (except metallic and mineral fuels materials) has continued its rapid growth in recent years. Although amounting to only 1.2 percent of all raw materials in the period 1950-1961, consumption of chemical materials was 50 percent larger than during the preceding decade.

Because of rising energy requirements, consumption of mineral fuels continued its growth, constituting 24 percent of all raw materials in the period 1950-1961, compared to 21 percent during the period of 1940-1949.

Agricultural foods remain the largest single group of raw materials. However, relative to all materials consumption, agricultural foods have gradually declined in recent years, representing 49.1 percent of the total in the period 1950-1961 as against 51.6 percent during the previous decade. The proportion of all raw materials represented by agricultural nonfoods was about 9 percent of the total in the 1950-1961 period, as compared to 11 percent during 1940-1949. Consumption of fishery products increased in the 1950-1961 period, but consumption of wildlife products declined somewhat from the preceding decade.

PRICE TRENDS

The average of raw materials prices declined after 1951 from the alltime high point attained in that year. The decline reflected the greater decline in agricultural materials prices, particularly those of livestock. Forest products prices remained relatively stable over the last decade, while the prices of most minerals groups continued to rise until about 1957 and then remained relatively stable through 1961.

Between 1951 (the alltime peak year for agriculture prices) and 1956, prices for all agricultural materials declined 21 percent, with a decline of 6 percent for crops and 31 percent for livestock. After 1956, the price of crops continued to decline but the price of livestock increased, yielding the same average price level for all agricultural materials in 1961 as in 1956.

The alltime peak of prices for minerals was not attained until 1957. During the years 1950 through 1957, the average of prices for all minerals increased by 25 percent. The prices of iron and ferroalloy ores rose by 49 percent; other metal ores, by 22 percent; oil and gas, by 29 percent; mineral construction materials, by 19 percent; and those of nonmetallic chemical and fertilizer minerals, by 33 percent. The price of coal, however, was about the same at the beginning and end of this period. The price of all foods reached a peak in 1951 and afterwards declined 21 percent. The peak price, at 22 percent above the 1950 level, for all energy materials was not attained until 1957.

After 1956, raw materials prices remained relatively stable through 1961, except for a temporary increase in 1958. The latter increase reflected the increase in prices of agricultural materials during 1958, almost to the 1950 level. After 1956, the price of metallic minerals declined for 2 successive years, then increased to 31 percent above 1950 and remained approximately stable for 3 years. Mineral fuels prices did not reach a peak until 1957, when they were 21 percent above 1950. Thereafter they declined somewhat and in 1961 were 18 percent above 1950. The prices of construction, chemical, and other minerals continued to rise during most of the period after 1950, reaching a peak, in 1961, of 42 percent above the 1950 level.

During the 1950-1961 period the BLS average of all wholesale commodity prices increased by 16 percent, and the BLS index of finished commodity prices showed an increase of 21 percent.

PRODUCTION PER EMPLOYEE

One of the most striking characteristics of the raw materials industries in the decade of the 1950's was the rapid increase in production per employee. For all raw materials industries, in 1954 dollars, production per person engaged increased from approximately five thousand dollars in 1950 to about nine thousand dollars in 1960. Between 1954 and 1958 alone, production per person engaged in agriculture increased by about 24 percent and production per man-hour by 42 percent; for forest products, the increase in production per person engaged in the same period was about 17 percent; and for the mineral industries, the increase was 16 percent in production per person and 25 percent in production per man-hour. Between 1954 and 1958, the increase in production per man-hour was as follows: For metal mining, 14 percent; for coal mining, 27 percent; for oil and gas extraction, 22 percent; and for mineral construction materials, 29 percent.

Chapter 3.--THE EXPANDING STRUCTURE SUPPORTED BY RAW MATERIALS

Raw materials industries have been strongly affected by long range technological developments bearing on the entire economy. A major consequence is that, although per capita consumption of raw materials has continued to increase, the relative contribution of the raw materials producing industries to the national product has been shrinking for over a half century and probably for a century. This shrinkage is evidenced in various ways. Among them are the changed pattern of our foreign trade; the relative, and more recently, actual, decline of our farm population; and the relative decline of employment and income produced in raw minerals and forest products industries (see chart 3 and tables 1 and 2).

The raw materials industries, assisted by technology, have thus been able to support a continually expanding economic structure without corresponding increases of raw materials output.

RELATIVE EXPANSION OF THE PROCESSING AND FABRICATING INDUSTRIES

Concurrent with the relative shrinkage of the raw materials industries in the national economy is the relative expansion of processing and fabricating industries. Some noncommodity producing activities, such as trade and government, have also expanded relative to the whole economy. Income originating in the commodity processing and fabricating industries (manufacturing and contract construction) increased from 29 to 34 percent of the total national income between 1929 and 1960 (see table 2). The number of persons engaged in production in these industries also expanded relatively over the same period but only from 27 to 30 percent of total workers, because of the rapid gains in productivity per man.

Prior to 1850, two-thirds or more of all gainful workers were engaged in agriculture. Since then, the proportion working on farms has declined steadily until in 1960 only about one person in sixteen was so engaged. Furthermore, the actual number of persons engaged in agriculture reached a peak about 1910 but has since fallen very substantially. This decline has been accelerated in the last decade.

Employment in forestry and fishing attained its maximum proportion of the total number engaged in all industries during the late nineteenth century, and appears to have increased in actual numbers until about 1910, then remained relatively stable until about 1950.

Employment in the mineral industries attained its maximum about 1920 and thereafter declined gradually both absolutely and relatively. Contraction in coal and metal mining has more than offset continued expansion in certain nonmetallic mining industries, including, until very recently, oil and gas extraction.

MAKING RAW MATERIALS GO FURTHER

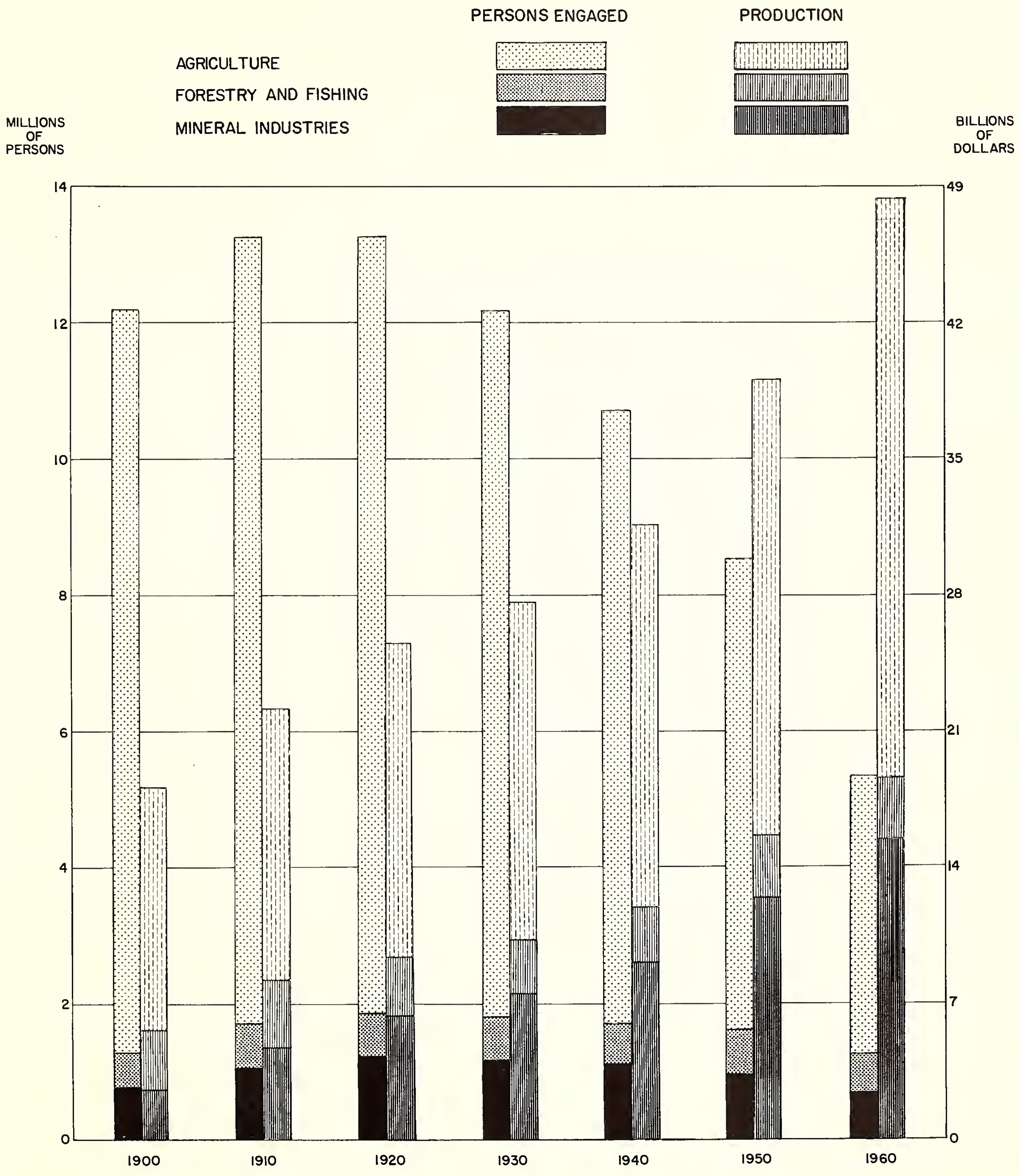
Several important factors contribute to the expanding structure of processing and fabricating industries supported by the raw materials industries. Among these factors which have made raw materials go further are: (1) Improvements in technology and design and reduction of waste; (2) increased complexity of products used by the consumer; (3) development of synthetic materials; and (4) development of scrap industries.

Improvements in Technology and Design and Reduction of Waste.--There has been a trend toward decreasing raw materials requirements per unit of goods and services produced. A sharp decline is shown, for example, in many areas in fuel requirements per unit of output. In 1899, an average of 7.05 pounds of coal were consumed by electric utility plants in the United States to produce one kilowatt-hour of electric energy; by 1961, only 0.86 pounds were needed. In 1916, 169 pounds of coal were required by steam locomotives to haul 1,000 gross tons of freight one mile; by 1952, only 116 pounds were used. In 1919, 958 cubic feet of natural gas were required to produce one pound of carbon black; by 1961, only 270 cubic feet were required (largely because of the increasing proportion produced as furnace black). For all primary metals industries, the consumption of fuels and electric energy increased, between 1939 and 1958, by only 49 percent, while production increased by 104 percent; likewise, for all chemicals and allied products industries, consumption of fuels and electric energy increased by 291 percent in the same period and production by 353 percent. In fact, for all manufacturing, in the same period, fuels and electric energy use increased by 102 percent and production by 139 percent (see table C2 and chart 11).

In the case of nonfuel uses, there has also been increasing economy in the consumption of materials by redesigning final products with that purpose in mind and by reducing waste manufacture. Examples of reduction in such materials requirements are the decreased height of ceilings in dwelling units, the reduction in weight of rail passenger cars, the sub-

CHART 3.–PERSONS ENGAGED AND PRODUCTION OF RAW MATERIALS IN THE UNITED STATES: 1900–1960

(Production measured in constant 1954 dollars)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Table 1.--Experienced Civilian Labor Force Engaged in Raw Materials and Other Industries in the United States, Total and Percent Distribution: 1820-1960

Year	Experienced civilian labor force (thousands)	Percent distribution						
		All industries, total	Raw materials industries				All other industries	
			Total	Agriculture	Forestry and fishing	Mineral industries	Total	Manufacturing and construction only
1960	67,990	100.0	8.2	6.3	0.8	1.1	91.8	33.9
1950	59,230	100.0	14.5	11.7	1.1	1.7	85.5	32.1
1940	51,742	100.0	20.6	17.4	1.1	2.1	79.4	29.3
1930	48,686	100.0	24.9	21.2	1.3	2.4	75.1	27.6
1920	42,206	100.0	31.5	27.0	1.5	3.0	68.5	30.1
1910	37,291	100.0	35.5	30.9	1.7	2.9	64.5	27.2
1900	29,030	100.0	41.8	37.5	1.7	2.6	58.2	26.6
1890	23,290	100.0	46.4	42.7	1.7	2.0	53.6	25.6
1880	17,368	100.0	52.5	49.4	1.3	1.8	47.5	22.3
1870	12,901	100.0	56.0	53.1	1.4	1.5	44.0	21.4
1860	10,533	100.0	61.5	58.9	1.0	1.6	38.5	17.8
1850	7,697	100.0	65.7	63.7	0.8	1.2	34.3	15.9
1840	5,420	100.0	(NA)	68.6	(NA)	0.3	(NA)	14.2
1830	3,932	100.0	(NA)	70.5	(NA)	(NA)	(NA)	(NA)
1820	2,881	100.0	(NA)	71.8	(NA)	(NA)	(NA)	11.8

NA Not available.

Source: Based on U.S. Department of Commerce, Bureau of the Census reports as follows: 1960 Census of Population, Occupations of the Experienced Civilian Labor Force and the Labor Reserve: 1960, PC(S1)-40 (1962); Occupational Trends in the United States 1900 to 1950, Bureau of the Census Working Paper No. 5 (1958); and Historical Statistics of the United States, Colonial Times to 1957 (1960). The figures for the experienced civilian labor force (also called "economically active persons") and those for agriculture for all years are from the first two sources. The percentages for other items for 1940 and prior years represent "gainful workers" based on the third source. For all years, the figures for forestry from the above sources were adjusted upward and those for manufacturing were adjusted downward to transfer all persons engaged in timber harvesting out of the manufacturing statistics. The adjustment percentages were based on the 1958 and 1954 figures in U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963). The 1940-1960 figures from the first source for forestry and fishing were adjusted upward on the basis of the ratio of that series to the series from the third source in 1930. Even the adjusted figures for forestry probably represent an understatement for early years, probably excluding much of the harvesting of fuel wood. For mineral industries and for manufacturing and construction, percentages derived from the first source were used for 1950 and 1960, after the adjustment was made to exclude timber harvesting from the manufacturing total.

stitution of electrolytic for hot-dip tin plate to reduce the quantity of tin required, and recently the decreasing average size of passenger motor vehicles. Examples of reduction in waste of materials are the substitution of the byproduct for the beehive oven in making coke, thus recovering large quantities of gas, liquid fuels, and the basic materials for the coal chemicals industries; and the recovery of sulfur, formerly wasted, as a byproduct from a variety of industrial operations such as the smelting of copper, lead, and zinc ores.

Increased Complexity of Products Used by the Consumer. --A second factor in the growth of the processing and fabricating industries relative to those producing raw materials is the increasing complexity of the products purchased for personal consumption, for business plant and equipment, or bought by the Government for military and civilian uses. Moreover, many raw products which were previously used without processing, now pass through the manufacturing industries. Examples are frozen foods and processed fuels. The net result is that a given unit of raw material is fabricated to a progressively higher degree. Thus, the metals entering into the weapons used by our armed forces in World War II and those being procured currently for national defense require considerably more fabrication per ton of metal consumed than was the case in World War I. With regard to all metals and metal products in the United States, for the years 1939, 1947, 1954, and 1958, a rough quantitative comparison is afforded by the following index numbers:

Item	1958	1954	1947	1939
Physical volume of metal ores, except gold and silver:[1]				
Production	130	137	139	100
Consumption	196	221	162	100
Physical volume of production for manufacturing industries:[2]				
Fabricated metal products	235	226	198	100
Machinery, except electrical	374	310	267	100
Electrical machinery		472	286	100
Transportation equipment	409	382	202	100

[1] Based on appendix A, tables A1, A4, and A11 of this report.

[2] For source see appendix C, table C2 of this report.

Table 2.--Income Produced and Persons Engaged in Production for Raw Materials and all Other Industries in the United States, Totals and Percent Distribution: 1929, 1940, 1950, and 1960

Item	1960	1950	1940	1929
INCOME PRODUCED				
All industries.....Million dollars...	415,480	241,876	81,634	87,814
Percent...	100.0	100.0	100.0	100.0
Raw materials industries, total.....do.....	6.2	10.5	10.6	12.4
Agriculture.....do.....	4.1	7.3	7.5	9.3
Forestry and fishing.....do.....	0.8	1.1	0.8	0.8
Mining.....do.....	1.3	2.1	2.3	2.3
All other industries.....do.....	93.8	89.5	89.4	87.6
Manufacturing and construction only.....do.....	33.9	34.7	29.9	28.6
PERSONS ENGAGED IN PRODUCTION				
All industries.....Thousand...	67,305	58,731	48,486	46,216
Percent...	100.0	100.0	100.0	100.0
Raw materials industries, total.....do.....	9.5	13.8	19.3	23.0
Agriculture.....do.....	7.5	11.0	16.4	19.7
Forestry and fishing.....do.....	0.9	1.2	0.9	1.1
Mining.....do.....	1.1	1.6	2.0	2.2
All other industries.....do.....	90.5	86.2	80.7	77.0
Manufacturing and construction only.....do.....	30.0	30.6	25.9	26.9

Source: U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, National Income Number (July 1962), U.S. Income and Output (1958), and National Income 1954 Edition (1954). For all years, the figures for forestry from these sources have been adjusted upward and those for manufacturing adjusted downward to transfer persons engaged in timber harvesting out of the manufacturing statistics; adjustment percentages used for the "Lumber and wood products" and "Paper and allied products" groups are based on figures for 1958 and 1954 in U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963).

Increasing fabrication per unit of raw materials consumed is indicated not only for metal ores and metal products, but it appears to be true also for all raw materials in general.

Period	Percent increase	
	Consumption of all raw materials, except gold and silver[1]	Production of all manufacturing industries[2]
1900-1961........	215	945
1954-1961........	14	28
1947-1954........	11	28
1939-1947........	29	74
1929-1939........	3	2
1919-1929........	28	64
1909-1919........	13	41
1900-1909........	30	55

[1] Based on appendix A, tables A4 and A11 of this report.

[2] Source: Based on Bureau of the Census, Historical Statistics of the United States 1789-1945 and 1954 Census of Manufactures, Volume IV, Indexes of Production, Bureau of the Census, Board of Governors of the Federal Reserve System, and U.S. Department of Labor, Bureau of Labor Statistics (1958) and for 1961 on the Federal Reserve Board index of industrial production.

Development of Synthetic Materials.--A third major factor in the growth of the processing and fabricating industries relative to those extracting raw materials, is the development of synthetic raw materials. Since these materials result from the processing of crude materials, the industries producing them are classified as manufacturing rather than extractive. Examples are the well known synthetic fibers such as rayon, nylon, and orlon; synthetic rubber; and plastics. The significance of this development is that more and more of the materials input used in manufacturing plants is coming from other factories instead of from farms, mines, and forests. To be sure, the crude materials from which synthetics are made must still come from farms, mines, forests, or the sea, but such materials are generally worth much less than the natural raw materials they replace and they may be abundant rather than scarce materials. These materials, however, require much processing and the consumption of considerable energy before they take the forms in which they are substitutes for cotton, wool, silk, natural rubber, metals, and other natural raw materials.

Development of Scrap Industries.--Another factor that has contributed to the relative shrinkage of the raw materials industries is the development of scrap industries for recovering waste materials and channeling them back into industry for still further use. These industries buy or collect used or waste materials and, where necessary, process them to render them suitable for use as substitutes for new raw materials. Some of the establishments which buy and collect the scrap are classified in manufacturing industries. Examples of industries where scrap materials satisfy a sizable portion of total annual raw materials requirements are steel, nonferrous metals, rubber, paper and paperboard, and certain textile products. Between 1910 and the 1945-1949 period, for example, the production of secondary nonferrous metals increased from 14 percent of the total of primary and secondary production to 39 percent.[1] Thereafter, this percentage declined somewhat, to 31 percent in 1961.

Just as the growth of synthetics means that relatively more of the materials input of our factories is being provided by other manufactures, so the rapid growth of the various scrap industries has resulted in relatively larger shares of the material requirements of industry being provided by merchant wholesalers and manufacturing industries.

---

[1] See appendix A, tables A4 and A11 of this report.

Chapter 4.--CHANGES IN RELATIVE IMPORTANCE AND LOCATION OF RAW MATERIALS INDUSTRIES

The many new and more elaborate uses which have been made of raw materials, together with the technological developments in raw materials production and use and the problems of maintenance of adequate reserves, have resulted in significant changes in the relative magnitude of the raw materials industries of the United States. Some of the relative changes in employment in these industries have already been noted. Charts 3 and 4 and tables 3 and 4 show the relative magnitude of these changes measured in terms of constant 1954 dollars at the point of production.

RAW MATERIALS PRODUCTION

The most striking increase in domestic raw materials industries since the beginning of the present century is the sixfold expansion in production of minerals. Even greater rates of increase are shown for each of the major groups of nonmetallic minerals: Mineral fuels, construction materials, and other nonmetallic minerals. A fourfold expansion is indicated for iron and ferroalloy ores (to 1960) and a twofold increase for other metal ores. In most cases progressive increases were shown for each succeeding 5-year period, except during the depression period of the early thirties.

By contrast, the production of agricultural materials only increased by two and one-third times during the last 60 years, with crops doubling and livestock products increasing by two and one-half times. However, in the last decade the production of agricultural materials increased as rapidly as the production of minerals.

For fishery products the increase during the present century was about one-half, while wildlife products doubled. Production of forest products was about the same at the end of the period as at the beginning of the century, with peak production occurring prior to the first World War and lowest production during the 1930's and 1940's.

These production changes do not parallel changes in the number of persons engaged in the raw materials industries. As indicated roughly in chart 3, and discussed more fully in chapter 8, production per man engaged in the mineral industries and also in agriculture increased sixfold, with the increase for minerals slightly greater than for agriculture. A major portion of this increase for both areas occurred in the last decade. In effecting the increase in mineral production, the mineral industries faced many problems, such as exhaustion of some of the richest and most accessible deposits and decline in grade of ore. Technology more than overcame these problems by increasing mechanization of mining processes; development of new techniques for finding minerals; and, in the case of oil and gas, development of ways to drill wells deeper and faster. New and improved methods made it possible, in some cases, to produce marketable concentrates from lean ores even more cheaply than from the rich veins of earlier years. In general, these technological advances could be applied only by significant increases in use of energy. Thus, while employment at mineral operations declined between 1939 and 1958 by 12 percent, mineral production increased by 83 percent, and the energy equivalent of fuels and purchased electric energy used at these operations increased by 80 percent.

Mechanization of agricultural processes, crop rotation, improved seeds and breeding stocks, and widespread use of fertilizers were leading developments that made possible the expanded output rates in agriculture.

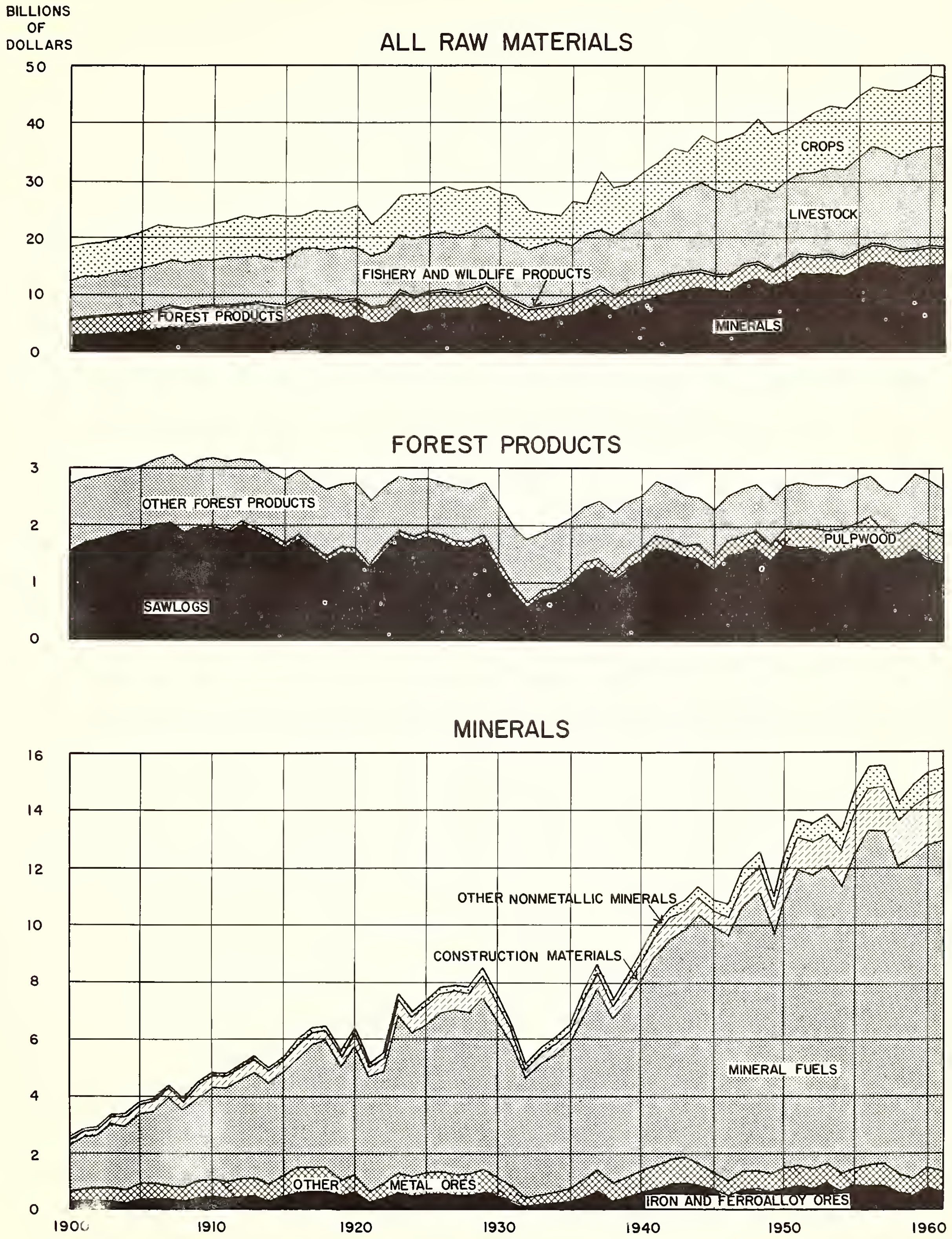
EFFECT ON REGIONAL DEVELOPMENT

The location of raw materials supplies is a potent, and, in some cases, a governing factor in the location of industry. Some localities, where climatic or other conditions are unfavorable, might not be settled at all except for the presence of valuable natural resources. As these resources are exhausted, or suffer severely from the competition of substitutes, population may either drift away or remain under depressed economic circumstances. Hence, the development of new sources of raw materials or the exhaustion of old ones may play an important part in determining economic trends in one region relative to another.

This is as true of the world economy as of the domestic. The development of man made fibers has had definite repercussions on those regions producing silk, wool, and cotton, while the rise of synthetic rubber has affected the regions growing natural rubber.

CHART 4.-PRODUCTION OF RAW MATERIALS IN THE UNITED STATES: 1900-1961

(Production measured in constant 1954 dollars.)



The alumina and aluminum industries are an illustration of the influence of raw material trends on plant location. Alumina plants are located chiefly with reference to economical assembly of the raw materials and hence are placed either near domestic bauxite deposits (mostly in Arkansas) or close to tidewater if imported bauxite is used. Since nearly all our imported aluminum-bearing raw materials come from the Caribbean areas and northeastern South America, alumina plants processing imported ores are located along the gulf coast.

Aluminum plants for the reduction of alumina, on the other hand, must be located close to cheap power because of the large energy requirements. Hence, much of the country's aluminum capacity has centered in the Pacific Northwest where there is cheap hydroelectric energy, with the second largest aluminum capacity developing in Texas where cheap natural gas and lignite are found.

The availability of adequate supplies of water and suitable climate conditions determines the location of agriculture and the forest products industries. These industries, in turn, play a major role in the location of associated food and wood processing manufacturing facilities.

For the mineral industries, there has been a striking change in geographic location during the period covered by this report. (See chart 5 and table 5). Whereas, one-third of all employment at mineral operations was in the Middle Atlantic States, chiefly in Pennsylvania, during the first three decades of this century, by the end of the sixth decade, this division accounted for only 12 percent. In the same period, mineral employment in the West South Central States increased from only one and one-half percent at the beginning of the century to nearly one-third of the total, Texas alone accounting for 18 percent of all such employment in 1958. This change, of course, reflects primarily the shift in relative magnitudes of the coal mining and oil and gas extraction industries which followed the discovery and development of the great oil and gas reserves in the West South Central States. Meanwhile, the Mountain and Pacific States remained at roughly one-sixth of the total mining employment, with the relative decline in metal mining employment compensated by increases in oil and gas extraction and in certain other nonmetallic minerals mining.

Table 3.--Percent Distribution of Production and Apparent Consumption of Raw Materials in the United States, by Broad Product Groups: 10-Year Periods, 1900-1959, and for 1960 and 1961

Raw materials group	1961	1960	1950-1959 average	1940-1949 average	1930-1939 average	1920-1929 average	1910-1919 average	1900-1909 average
PRODUCTION								
All raw materials................Million 1954 dollars...	47,743	48,242	43,572	36,455	26,953	26,775	23,611	20,177
Percent...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All raw materials, except gold...............do.....	99.9	99.9	99.8	99.8	99.6	99.7	99.4	99.3
Agricultural materials..............................do.....	61.1	61.6	60.2	62.0	65.2	62.4	63.3	66.5
Crops...do.....	24.6	26.4	24.7	24.6	27.3	26.8	28.5	30.1
Livestock...do.....	36.6	35.2	35.5	37.3	37.9	35.6	34.8	36.4
Fishery and wildlife products.......................do.....	0.9	0.9	1.0	1.1	1.3	1.1	1.2	1.3
Forest products.....................................do.....	5.6	5.6	6.3	7.0	8.0	10.2	12.4	14.8
Sawlogs...do.....	2.9	2.9	3.6	4.0	3.7	6.1	7.3	9.1
Pulpwood..do.....	1.0	1.0	0.9	0.7	0.4	0.3	0.3	0.2
Other forest products.............................do.....	1.7	1.6	1.7	2.3	3.8	3.8	4.9	5.5
All minerals..do.....	32.4	31.9	32.5	29.9	25.5	26.3	23.0	17.4
All minerals, except gold.........................do.....	32.2	31.7	32.3	29.7	25.1	26.0	22.4	16.7
Metal ores, except gold.........................do.....	2.8	3.0	3.3	3.8	2.6	3.8	4.2	3.0
Mineral fuels...................................do.....	24.0	23.5	24.4	22.8	20.1	19.6	16.0	11.7
Construction materials..........................do.....	3.7	3.6	3.1	1.9	1.7	2.0	1.7	1.7
Other nonmetallic minerals......................do.....	1.7	1.7	1.6	1.1	0.7	0.6	0.5	0.3
APPARENT CONSUMPTION								
All raw materials................Million 1954 dollars...	50,906	51,271	47,240	40,061	29,729	27,819	23,456	19,301
Percent...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
All raw materials, except gold...............do.....	101.3	99.3	99.7	97.6	96.4	98.9	98.7	99.1
Agricultural materials..............................do.....	58.6	57.0	57.5	60.8	64.4	62.2	62.8	65.1
Crops...do.....	24.2	23.5	24.2	26.8	28.6	27.1	28.1	29.1
Livestock...do.....	34.5	33.6	33.4	34.0	35.8	35.1	34.7	36.0
Fishery and wildlife products.......................do.....	1.7	1.6	1.6	1.4	1.7	1.6	1.7	1.8
Forest products.....................................do.....	5.9	5.8	6.4	6.8	7.4	9.9	12.4	15.0
Sawlogs...do.....	3.0	3.0	3.6	3.7	3.3	5.7	7.2	9.2
Pulpwood..do.....	1.2	1.2	1.2	0.9	0.7	0.6	0.4	0.3
Other forest products.............................do.....	1.6	1.6	1.6	2.1	3.4	3.6	4.8	5.5
All minerals..do.....	33.8	35.6	34.5	31.0	26.5	26.4	23.2	18.0
All minerals, except gold.........................do.....	35.2	34.8	34.2	28.5	22.9	25.2	21.9	17.2
Metal ores, except gold.........................do.....	4.2	4.6	5.6	5.3	3.3	4.2	4.3	3.4
Mineral fuels...................................do.....	25.6	25.0	23.9	20.1	17.3	18.3	15.2	11.5
Construction materials..........................do.....	3.6	3.5	3.0	1.9	1.6	2.0	1.7	1.8
Other nonmetallic minerals......................do.....	1.8	1.7	1.6	1.2	0.7	0.7	0.6	0.5

Source: Based on table 4.

Table 4.--Average Annual Production, Imports, Exports, and Apparent Consumption of Raw Materials

(Measured in millions of

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
PRODUCTION								
1961	47,743	47,690	29,193	11,739	17,454	446	341	105
1960	48,242	48,184	29,728	12,733	16,995	450	338	112
1955-1959	45,820	45,759	27,644	11,286	16,358	452	346	106
1950-1954	41,324	41,254	24,832	10,223	14,609	443	352	91
1945-1949	38,210	38,150	23,783	9,773	14,010	435	351	84
1940-1944	34,701	34,594	21,386	8,177	13,209	382	311	71
1935-1939	28,400	28,259	18,052	7,929	10,122	386	328	58
1930-1934	25,507	25,424	17,086	6,773	10,313	321	263	58
1925-1929	28,318	28,243	17,426	7,590	9,837	319	276	43
1920-1924	25,232	25,149	15,991	6,751	9,239	271	234	37
1915-1919	24,146	24,013	15,162	6,691	8,471	294	263	31
1910-1914	23,075	22,919	14,723	6,763	7,960	292	231	61
1905-1909	21,412	21,256	13,982	6,256	7,726	277	224	53
1900-1904	18,942	18,810	12,840	5,877	6,963	267	221	46
IMPORTS								
1961	10,302	10,253	5,678	4,763	915	479	378	101
1960	10,360	10,036	5,490	4,698	792	423	344	79
1955-1959	9,549	9,333	5,025	4,332	693	372	298	74
1950-1954	8,340	8,127	4,798	4,161	637	304	225	79
1945-1949	7,762	6,744	4,580	3,945	636	257	144	113
1940-1944	7,183	6,044	4,153	3,481	672	207	106	101
1935-1939	7,382	5,402	4,052	3,511	540	240	151	89
1930-1934	4,820	4,332	3,333	2,920	413	199	129	70
1925-1929	5,280	5,070	3,675	3,012	663	226	151	75
1920-1924	4,858	4,343	3,111	2,555	557	204	154	50
1915-1919	4,077	3,687	2,753	2,102	651	208	164	44
1910-1914	2,968	2,893	2,170	1,731	439	190	149	41
1905-1909	2,509	2,418	1,863	1,577	286	148	108	40
1900-1904	2,176	2,120	1,646	1,423	223	128	84	44
EXPORTS								
1961	7,176	6,394	5,052	4,412	640	76	33	43
1960	6,296	6,294	4,949	4,360	589	75	42	33
1955-1959	5,128	5,081	3,765	3,130	635	64	37	27
1950-1954	4,046	3,807	2,784	2,370	414	46	29	17
1945-1949	3,850	3,679	2,562	1.978	585	57	43	14
1940-1944	2,896	2,700	1,648	875	774	64	59	5
1935-1939	2,635	2,619	1,600	1,481	119	67	50	17
1930-1934	3,374	2,851	2,022	1,816	206	60	41	19
1925-1929	4,198	3,963	2,712	2,383	329	74	58	16
1920-1924	3,770	3,738	2,792	2,239	553	82	69	13
1915-1919	4,122	4,031	3,040	2,101	939	123	108	15
1910-1914	3,233	3,185	2,326	2,021	304	83	53	30
1905-1909	3,182	3,138	2,509	1,930	579	62	41	21
1900-1904	3,255	3,196	2,678	1,956	722	63	42	21
APPARENT CONSUMPTION								
1961	50,906	51,586	29,855	12,305	17,550	850	687	163
1960	51,271	50,891	29,233	12,029	17,204	799	640	159
1955-1959	49,480	49,250	28,143	11,577	16,566	760	607	153
1950-1954	44,999	44,955	26,228	11,271	14,957	701	548	153
1945-1949	41,485	40,578	25,165	11,017	14,148	635	452	183
1940-1944	38,637	37,586	23,539	10,459	13,080	525	358	167
1935-1939	32,392	30,289	19,750	9,065	10,685	559	429	130
1930-1934	27,067	27,020	18,512	7,936	10,576	460	351	109
1925-1929	29,387	29,336	18,374	8,105	10,269	471	369	102
1920-1924	26,252	25,686	16,241	6,998	9,243	393	319	74
1915-1919	24,101	23,669	14,875	6,692	8,183	379	319	60
1910-1914	22,811	22,628	14,567	6,473	8,094	400	328	72
1905-1909	20,740	20,536	13,336	5,903	7,433	363	291	72
1900-1904	17,863	17,734	11,809	5,345	6,464	332	263	69

Note: Figures may not add exactly due to rounding.

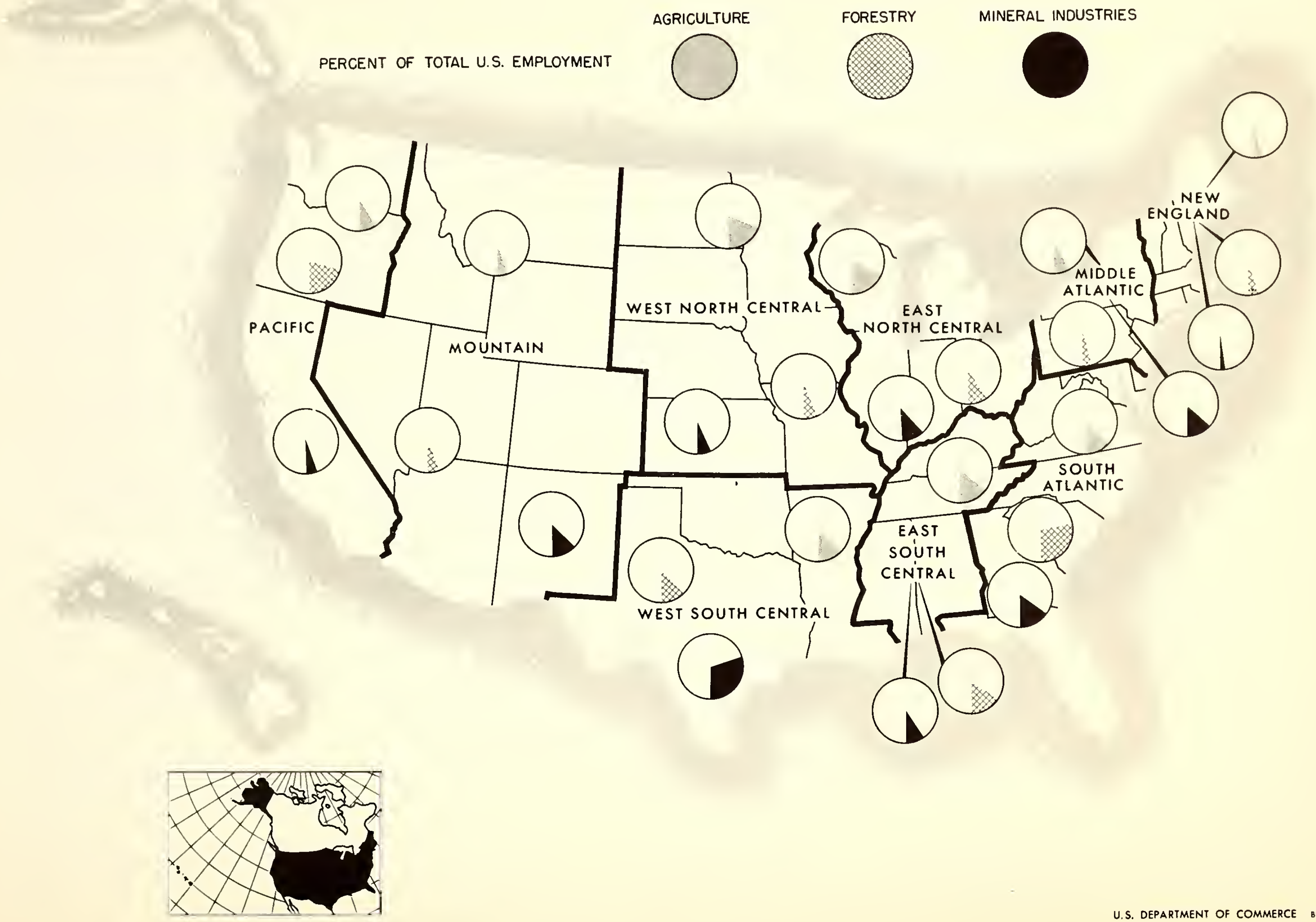
in the United States, by Broad Product Groups, for 5-Year Periods, 1900-1959, and for 1960 and 1961

of constant 1954 dollars)

Forest products				Minerals								Year
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferro-alloy ores	Other metal ores		Mineral fuels	Construction materials	Other non-metallic minerals	
							Total	Total, except gold				
2,659	1,376	487	796	15,445	15,392	621	771	718	11,451	1,773	829	1961
2,692	1,422	490	780	15,372	15,314	780	733	675	11,325	1,734	800	1960
2,749	1.552	450	747	14,975	14,914	762	729	668	11,184	1,552	748	1955-1959
2,707	1,617	357	733	13,342	13,272	811	727	657	10,056	1,127	621	1950-1954
2,531	1,454	264	813	11,461	11,401	679	618	558	8,939	758	467	1945-1949
2,595	1,492	215	888	10,338	10,231	779	868	761	7,674	661	356	1940-1944
2,312	1,160	125	1,027	7,650	7,510	376	632	492	5,921	499	222	1935-1939
1,993	861	89	1,043	6,107	6,025	213	412	330	4,912	407	163	1930-1934
2,734	1,686	87	961	7,839	7,764	490	756	681	5,756	646	192	1925-1929
2,708	1,567	70	1,071	6,263	6,180	395	562	480	4,717	434	155	1920-1924
2,773	1,559	68	1,146	5,917	5,784	515	774	641	4,128	366	134	1915-1919
3,100	1,888	53	1,159	4,960	4,804	370	617	461	3,453	430	90	1910-1914
3,103	1,931	44	1,128	4,050	3,894	334	526	370	2,743	373	74	1905-1909
2,868	1,731	32	1,104	2,967	2,835	227	424	292	1,964	298	53	1900-1904
449	186	205	58	3,696	3,647	686	782	733	1,947	82	199	1961
429	171	204	54	4,018	3,694	713	1,109	785	1,902	90	204	1960
402	152	199	51	3,750	3,534	774	1,081	865	1,609	89	197	1955-1959
354	125	195	34	2,884	2,671	611	1,047	834	972	82	172	1950-1954
254	62	165	27	2,671	1,653	371	1,631	613	487	58	124	1945-1949
191	48	120	23	2,633	1,494	378	1,873	734	223	40	118	1940-1944
181	26	134	21	2,909	929	173	2,478	498	167	27	64	1935-1939
145	26	105	14	1,143	655	86	792	304	209	16	40	1930-1934
210	74	110	26	1,169	959	149	676	466	247	32	65	1925-1929
157	65	72	20	1,386	871	92	898	383	327	20	49	1920-1924
106	51	40	15	1,010	620	131	727	337	99	14	39	1915-1919
85	41	32	12	523	448	86	343	268	29	12	53	1910-1914
64	39	18	7	434	343	61	310	219	11	9	43	1905-1909
44	27	11	6	358	302	71	228	172	14	6	39	1900-1904
121	34	62	25	1,927	1,145	328	1,093	311	367	4	135	1961
125	38	57	30	1,147	1,145	302	310	308	398	6	131	1960
99	34	36	29	1,200	1,153	224	225	178	639	5	107	1955-1959
78	32	18	28	1,138	899	128	359	120	573	4	74	1950-1954
70	33	12	25	1,161	990	150	296	125	655	4	56	1945-1949
66	24	20	22	1,118	922	172	383	187	525	2	36	1940-1944
105	53	11	41	863	847	107	196	180	523	2	35	1935-1939
119	69	6	44	1,173	650	37	705	182	402	1	28	1930-1934
185	130	5	50	1,226	992	56	625	390	512	2	32	1925-1929
130	89	5	36	766	734	47	315	283	380	3	21	1920-1924
90	56	5	29	869	778	95	445	354	317	3	9	1915-1919
167	114	2	51	657	609	51	349	301	241	4	12	1910-1914
142	87	2	53	469	425	25	266	222	167	2	9	1905-1909
132	74	1	57	382	323	14	238	179	119	5	6	1900-1904
2,987	1,528	630	829	17,214	17,894	979	460	1,140	13,031	1,851	893	1961
2,996	1,555	637	804	18,243	17,863	1,191	1,532	1,152	12,829	1,818	873	1960
3,052	1,670	613	769	17,525	17,295	1,312	1,585	1,355	12,154	1,636	838	1955-1959
2,983	1,710	534	739	15,088	15,044	1,294	1,415	1,371	10,455	1,205	719	1950-1954
2,715	1,483	417	815	12,971	12,064	900	1,953	1,046	8,771	812	535	1945-1949
2,720	1,516	315	889	11,853	10,802	985	2,359	1,308	7,372	698	439	1940-1944
2,388	1,133	248	1,007	9,696	7,592	442	2,914	810	5,565	524	251	1935-1939
2,019	818	188	1,013	6,077	6,030	262	499	452	4,719	422	175	1930-1934
2,760	1,630	192	938	7,782	7,732	583	807	757	5,491	676	226	1925-1929
2,735	1,543	137	1,055	6,883	6,317	440	1,145	580	4,664	451	183	1920-1924
2,789	1,554	103	1,132	6,058	5,626	551	1,056	624	3,910	377	164	1915-1919
3,018	1,815	83	1,120	4,826	4,643	405	611	428	3,241	438	131	1910-1914
3,025	1,883	60	1,082	4,015	3,812	370	570	367	2,587	380	108	1905-1909
2,780	1,684	42	1,053	2,942	2,813	284	414	285	1,859	299	86	1900-1904

Source: Based on tables A1, A2, A3, and A4. Also, see Appendix A for the methods used in constructing these measures, and for sources and limitations for the basic data used.

CHART 5.-DISTRIBUTION OF RAW MATERIALS EMPLOYMENT, BY GEOGRAPHIC DIVISIONS: 1958



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Table 5.--Percent Distribution of Employment in the Raw Materials Industries in the United States, by Geographic Divisions: Selected Years, 1900-1958

Division	Agriculture[1]				Forestry[2] 1958	Mineral industries[3]			
	1958	1939	1920	1900		1958	1939	1919	1902
UNITED STATES............Thousands..	7,525	11,338	13,432	12,781	423	754	856	1,063	622
Percent..	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
New England.......................do....	2.3	2.1	2.1	2.8	4.4	0.9	0.6	0.7	2.9
Middle Atlantic...................do....	5.9	6.0	6.0	7.5	4.3	11.9	25.6	33.3	33.7
East North Central................do....	17.3	14.6	15.0	17.4	8.7	10.5	12.6	19.1	22.0
West North Central................do....	18.6	16.1	15.6	16.5	5.6	7.2	5.2	6.3	8.4
South Atlantic....................do....	17.3	19.4	19.9	19.6	26.0	14.5	16.6	13.2	9.8
East South Central................do....	12.4	16.4	16.7	17.7	14.8	8.5	11.0	9.2	6.9
West South Central................do....	13.6	15.3	16.7	14.2	11.5	30.1	14.4	6.8	1.5
Mountain..........................do....	4.8	4.3	3.9	1.8	5.0	11.4	8.6	8.7	10.9
Pacific...........................do....	7.8	5.8	4.1	2.5	19.7	5.0	5.4	2.7	3.9

[1] Source: U.S. Department of Agriculture, Agricultural Statistics, 1960, 1956, and 1953 and Bureau of the Census, Twelfth Census of the United States, Volume V, Agriculture, Part I (1902). The total employment figures include both family and hired workers. For 1900, the percentage distribution by Geographic Division was based on the latter source, but the United States total was estimated by applying the percent change between 1900 and 1910 as indicated by Census figures to the 1910 employment shown in the former source.

[2] Source: U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963). The total employment represents equivalent full-time employees, including hired workers and forest owners.

[3] Source: Bureau of the Census, 1958 Census of Mineral Industries, Volume II, Area Statistics, pp. 19, 61, 69, 77, 85, 93, 101, 109, 117, and 125. Figures include employees at mines operated in conjunction with manufacturing establishments.

Chapter 5.--THE PATTERN OF RAW MATERIALS USE

The raw materials mix consumed by the Nation's economy has changed substantially since the beginning of the century. These changes reflect both varying demand preferences and altered supply conditions. They have been influenced and made possible by technological progress.

In terms of materials consumption, the expanding importance of minerals in the U. S. economy is even more pronounced than in terms of production. Whereas the country's mineral production increased from 16 percent of all raw materials produced in the years 1900-1904 to 32 percent in 1955-1961, the consumption of minerals increased between the same periods from 16 to 35 percent of all materials used. Consumption of agricultural products declined between these periods from 66 to 58 percent of all materials used; and consumption of forest products declined from 16 to 6 percent (see table 4).

CLASSIFICATIONS OF RAW MATERIALS USE

The changing pattern of raw materials use should not be considered solely from the standpoint of an industrial classification based on the origin of the materials: From the earth and rocks beneath us, from forests, from the ocean and its tributaries, or as the product of our agriculture. This classification is significant from the standpoint of kind of tools and manual skills required and from the standpoint of whether the resource should be considered exhaustible, semiexhaustible, or renewable.

An equally fruitful classification of materials is in terms of the principal purposes for which they are produced. From this approach, raw materials fall into three basic classes: Materials which furnish the physical structure of the things we make and use, materials which yield the energy to form and motivate our devices, and the food materials required by human beings.[1] The food group includes both agricultural foods, produced on farms and ranches, and fishery products. Energy materials cover the mineral fuels--coal, oil, and gas--and fuel wood. All other raw materials are included in the physical-structure materials group.

Physical-structure materials have accounted for about one-fourth of all raw materials used in the United States in each 5-year period since 1900, except the 1930-1934 depression period when they dropped to less than one-fifth (see chart 6 and table 6). The relative magnitude of consumption of physical-structure materials seems to be closely associated with business cycles, and no long range secular variation in their use relative to the use of other raw materials is apparent (see also appendix A, table A5).

---

[1] Of course, some materials serve more than one function and available statistics frequently do not or can not permit the segregation of uses. Food materials, for example, build and maintain the physical structure of, and furnish the energy for, human beings. Coke in the blast furnace performs both an energy and a physical-structure function.

Table 6.--Foods, Energy Materials, and Physical-Structure Materials as Percentages of All Raw Materials Consumed in the United States: 1900-1961

Period	Foods	Energy materials[1]	Physical-structure materials[2]
1960-1961	51.1	25.9	23.0
1955-1959	50.2	25.4	24.4
1950-1954	50.1	24.3	25.6
1945-1949	52.9	22.9	24.2
1940-1944	52.4	21.2	26.4
1935-1939	55.9	20.8	23.3
1930-1934	59.9	20.3	19.8
1925-1929	53.5	20.8	25.7
1920-1924	55.9	20.9	23.2
1915-1919	54.6	19.4	26.0
1910-1914	56.4	17.6	26.0
1905-1909	57.8	16.2	26.0
1900-1904	60.2	15.1	24.7

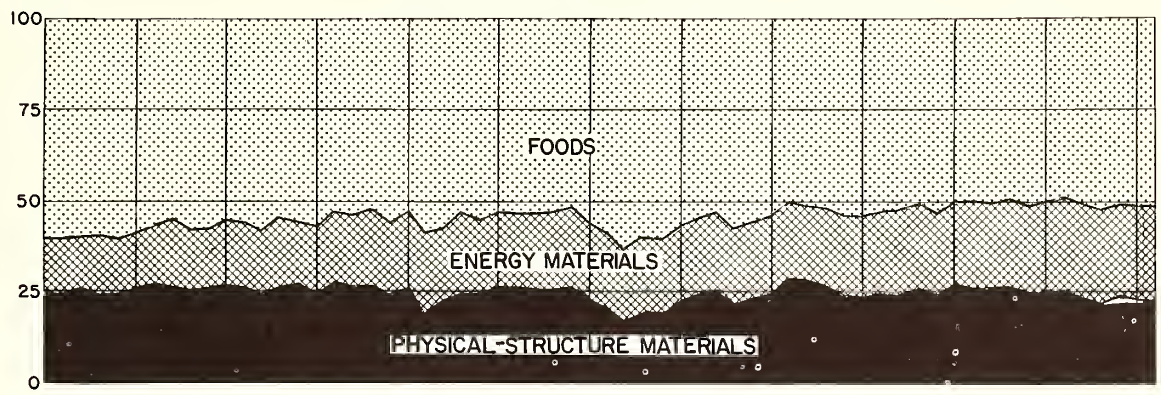
[1] Feed for horses and other work animals is excluded. However, it is estimated that the energy equivalent of the work performed by these animals amounted to less than one percent of the total energy used in the United States in each year of these six decades.

[2] The figures exclude gold.

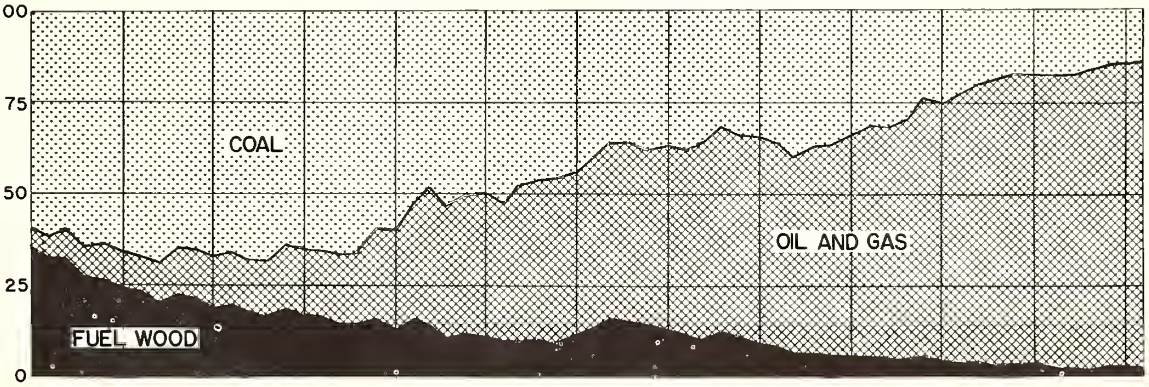
Source: Based on appendix A, table A5, of this report.

CHART 6.-CONSUMPTION OF RAW MATERIALS IN THE UNITED STATES: 1900-1961

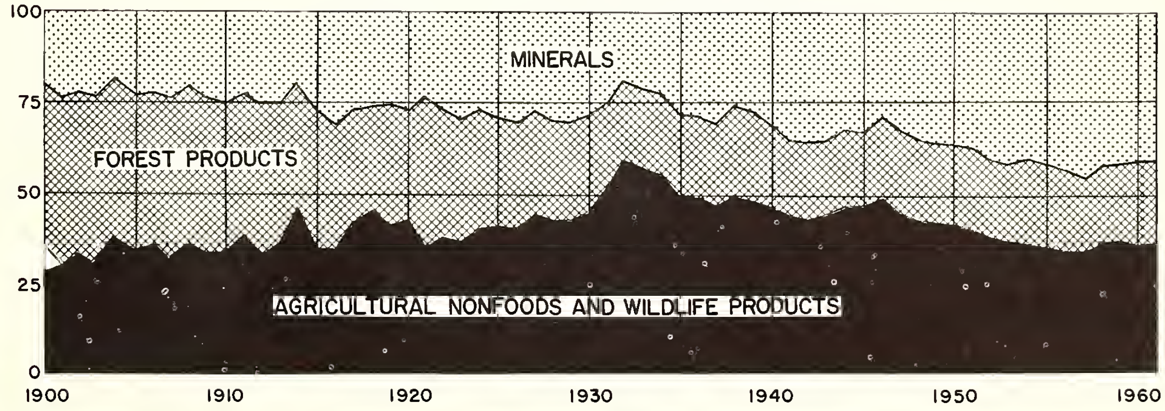
ALL RAW MATERIALS



ENERGY MATERIALS



PHYSICAL-STRUCTURE MATERIALS



The energy materials, by contrast, have increased in the half-century from less than one-sixth in the 1900-1904 period to over one-fourth of the total in the periods 1955-1959, and 1960-1961. The share for foods has declined as man's demands for other commodities have relatively increased.

THE EXPANDING ROLE OF THE ENERGY MATERIALS

The increasing demand for energy appears to be a long range secular trend, rather than related primarily to business cycles. The percentage for energy materials increased in each successive 5-year period between 1900 and 1924, from 15.1 percent of all materials to 20.9 percent. With the beginning of the depression, the percentage for energy dropped to 20.3 in the years 1930-1934, then again increased in each successive group of years to 25.9 percent in 1960-1961.

The relative increase in energy materials has occurred in spite of strikingly better efficiency in use of fuels, such as a previously mentioned 88 percent reduction in coal requirements for electric generation since 1900 and similar though smaller reductions in energy requirements per ton of pig iron produced, over 30 percent; per ton-mile of locomotive haul, over 30 percent; and per degree of effective house heating, as evidenced by the spread of central heating and the introduction of more efficient heating systems. The increase in energy materials consumption reflects changes in the uses which are made of fuels and increases in the degree of average fabrication of each unit of physical-structure materials, including the further processing of such materials for reuse.

The meaning of this expanding role of energy can be better understood from an analysis of the major uses of energy (combined in terms of equivalent British thermal units - BTU). Complete figures have been developed for only the 4 years shown in table 7.

The relative stability (except for two groups in 1954) over the 25-year period of the four major segments of uses implies that the rate of technological advance, and the effect of substitutions, must have been about equal in these segments with respect to the increasing use of energy: About one-fifth for "obtaining energy" (except for 1954), nearly one-fourth for "manufacturing," and about 28 percent each for "transportation" (except for 1954) and "domestic and commercial uses." The most significant changes were the large increase in the share of all energy used in energy conversion (coke production, petroleum refining, and the production of fuel-generated electricity) and the rising portion of total energy used in highway and other nonrail transportation, contrasting with the shrinking energy portion for the railroads.

Detailed statistics on energy use for power and heat by individual mineral and manufacturing industry are available for many census years beginning with 1909 for manufacturing industries and with 1919 for the mineral industries. These statistics are summarized in Appendix C, table C1, in terms of kwh equivalents (the international unit of energy). Chart 7 shows these statistics for 1958, together with employment and value added by major industry groups. The industry groups are ranked by total energy use. This chart illustrates the wide variations in energy requirements per employee and per unit of value added between major groups. Although the food group ranked first in 1958 in employment and value added, it ranked sixth among manufacturing industries in energy use. Very significant quantities of energy are used for power, but the major groups ranking at the top as energy users are all dominated by heat-process industries: the primary metal industries; petroleum refining; chemicals; and stone, clay, and glass. Even for the mineral industries, about half of the energy used by the first ranking oil and gas extraction group is for fuel purposes at natural gas liquids plants. Table 8 shows, for selected major groups, the shifts between energy use as indicated by census reports beginning with 1939.

Table 7.--Percent Distribution of Energy Use for All Purposes in the United States by Major Uses: 1929, 1939, 1947, and 1954

Energy use	1954	1947	1939	1929
All uses	100	100	100	100
Obtaining energy, total	24	18	19	16
Mineral fuel production	7	4	7	6
Energy conversion	17	14	12	10
Manufacturing (except energy conversion), total	23	23	20	24
Primary metals	9	9	8	10
Other manufacturing	14	14	12	14
Transportation, total	22	28	30	29
Railroads	3	12	12	18
Highway and other transportation	19	16	18	11
Domestic and commercial uses	28	28	29	28
Other fuel uses	3	3	2	3

Source: Based for 1929, 1939, and 1947 on statistics in William H. Lyon and D.S. Colby, Production, Consumption, and Use of Fuels and Electric Energy in the United States in 1929, 1939, and 1947, Bureau of Mines, U.S. Department of the Interior, Report of Investigations 4805, (October 1951), tables 4a, 5a, and 6a, and for 1954 primarily on statistics in Perry D. Teitelbaum, Energy Production and Consumption in the United States: an Analytical Study Based on 1954 Data, Bureau of Mines, U.S. Department of the Interior, and Resources for the Future, Inc., Report of Investigations 5821 (1961).

Table 8.--Percent Distribution of Energy Use by Mineral and Selected Manufacturing Industry Groups for the United States: 1939, 1947, 1954, and 1958

Industry group	1958	1954	1947	1939
All mineral industries	100.0	100.0	100.0	100.0
Oil and gas extraction	76.6	76.5	(NA)	65.7
Nonmetallic minerals mining	12.0	11.8	(NA)	9.0
Metal mining	6.8	5.7	(NA)	6.5
Coal mining	4.6	6.0	(NA)	18.8
All manufacturing industries	100.0	100.0	100.0	100.0
Primary metal industries	28.0	32.1	38.4	38.1
Petroleum and coal products	21.3	17.2	14.5	13.2
Chemicals and allied products	14.1	12.7	9.3	7.3
Stone, clay, and glass products	8.6	9.0	9.2	10.1
Paper and allied products	7.4	6.4	6.3	6.6
Food and kindred products	7.0	8.0	7.3	9.6
All other manufacturing industries	13.6	14.6	15.0	15.1

NA Not available.

Source: See appendix C, table C1 of this report.

USE OF ONE MATERIAL INSTEAD OF ANOTHER AND THE DEVELOPMENT OF SYNTHETICS

Over the last decade an increasing assurance has developed that we have little to fear from the exhaustion of raw materials resources, in particular from the exhaustion of other than energy materials. This is not only because energy materials provide the principal limitation on the upgrading of marginal resources, but also because of the increasing facility with which one material can be substituted for another given the basic abundant constituents of our environment: air, water, iron, aluminum, stone, and sand.

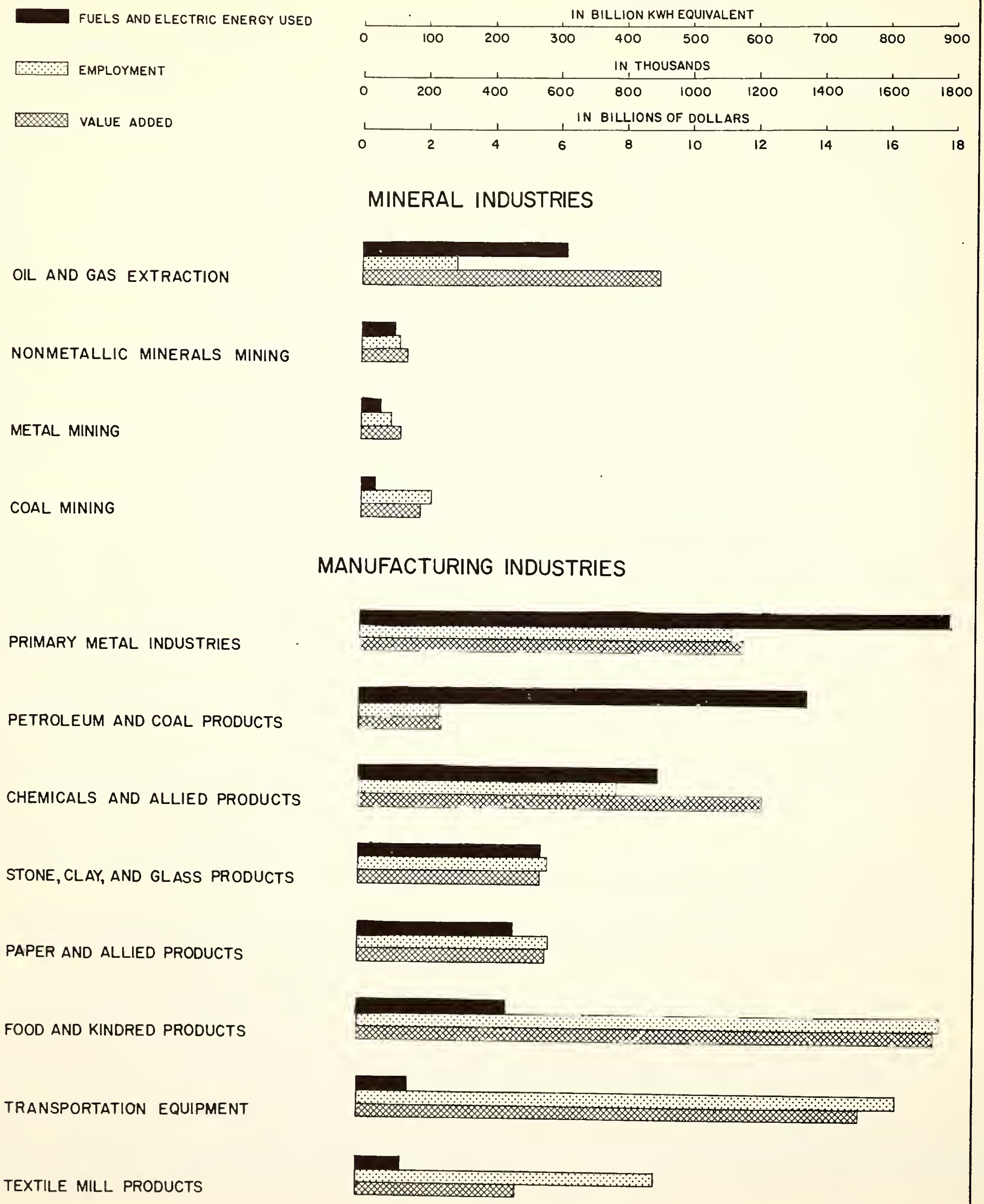
Among energy materials striking substitutions have already taken place, as indicated in chart 6, and new sources are being developed. Though the substitution of fission materials is still of little aggregate significance, along with solar energy it provides an assurance of a long-enduring, abundant energy supply.

Among physical-structure materials, chart 6 points up such substitutions as metal and other mineral construction materials for lumber. A more complex interchange of raw materials use under the direction of technology is illustrated by the substitution of man-made fibers and plastics for the direct products of agriculture, forest harvesting, and mining.

As an example of what occurs when synthetics replace natural raw materials, a comparison has been made of the inputs into raw cotton and cellulosic fiber production in 1958 (see table 9). Generalizations from this example must be made with caution. However, some generalizations appear to be well founded: (1) More energy materials are required to produce the synthetic substitute; (2) Less direct labor is required for producing the primary materials used and for processing them, but more indirect labor is needed in the production of the necessary plant and equipment; (3) Synthetics often have unique new properties which increase their value and this value is added in the manufacturing process; (4) When an agricultural raw material is replaced, there may be a reduced requirement for agricultural land accompanied by an increased requirement for forest land or mineral deposits.

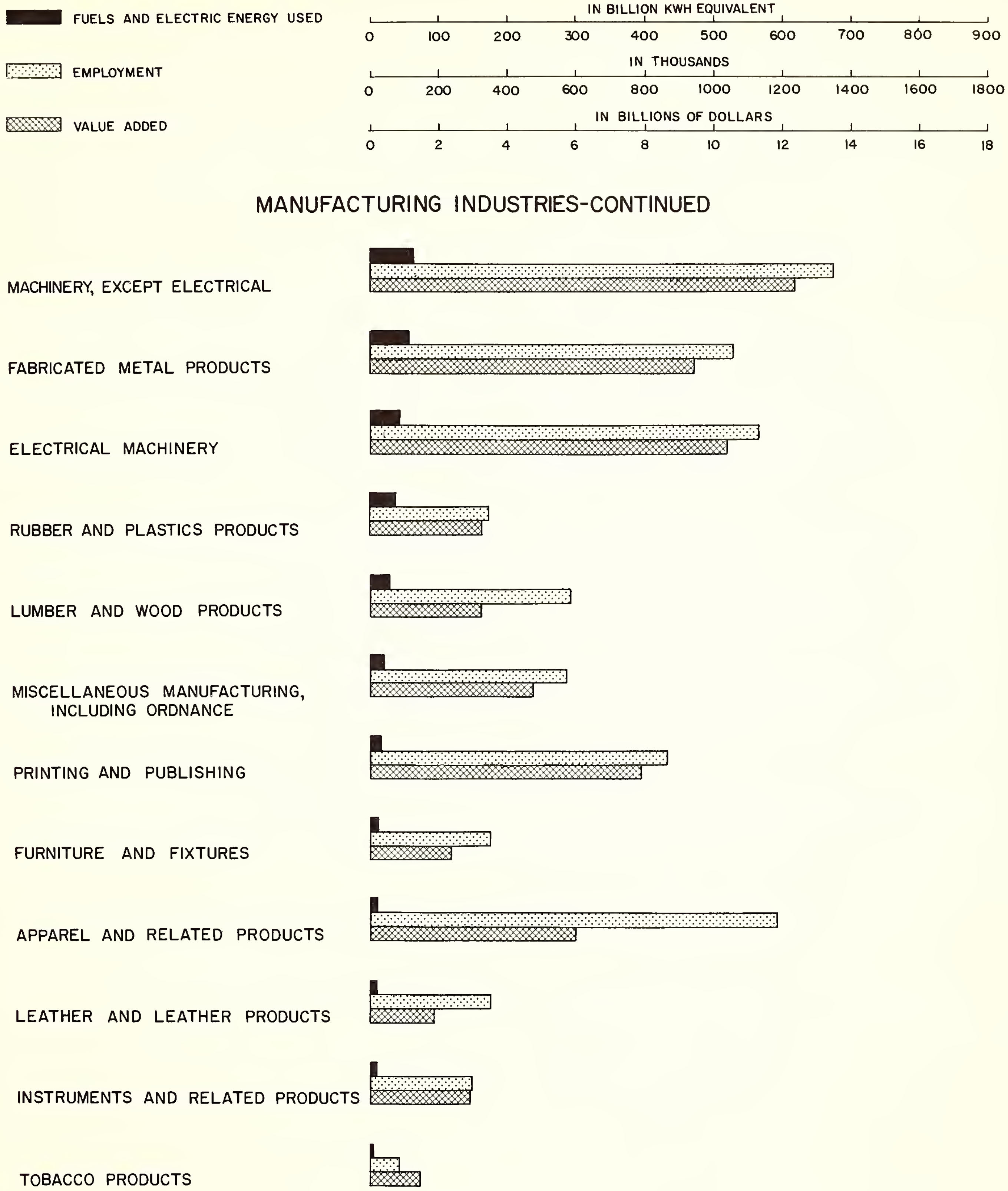
For example, consider the substitution of one billion pounds of raw cotton by a like amount of cellulosic man-made fibers at 1958 rates. The use of 2.3 million acres of cotton land and 150 million man-hours of farm labor is replaced by one million acres of forest land, 15 million man-hours of direct labor for raw materials production, and the use of considerable capital resources. The farm value of the cotton averaged 33 cents a pound, but for a pound of man-made fibers only 11 cents worth of crude materials were required. However, in producing these fibers, 42 cents more value was added in the manufacturing stage, involving an additional 70 million man-hours of direct labor and the use of much more

CHART 7.-FUELS AND ELECTRIC ENERGY USED, EMPLOYMENT, AND VALUE ADDED IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1958



U. S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

CHART 7.-FUELS AND ELECTRIC ENERGY USED, EMPLOYMENT, AND VALUE ADDED IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1958-CONTINUED



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

capital. The man-made fibers could support the higher price, in part, because of less waste in converting to fabrics, the more advanced stage of fabrication of filament yarns included, and other special properties of these man-made fibers.

The long-term economic consequences of such shifts in resource use as occur when synthetic fibers are substituted for raw cotton are far reaching but difficult to appraise in their entirety. One effect is on the marketing of materials. The billion-odd pounds of cellulosic man-made fibers produced in 1958, for example, were turned out by 26 establishments, whereas one billion pounds of raw cotton in that year were marketed by approximately 35, 000 farms. A market with a relatively small number of manufacturing suppliers experiences different price and volume behavior from one with many thousands of independent farmer suppliers.

Since the demand for raw materials is in most cases more variable than demand for finished products, the manufacturing sector of the economy is, in turn, affected by the addition of industries making synthetics for which demand, once the growth stage is past, will be subject to considerable fluctuation. Nevertheless, control of production from relatively few manufacturing plants is easier than at the farm level. This has already been evidenced by the greater stability of rayon, than of cotton, prices.

Table 9.--Approximate Inputs Into Raw Cotton and Cellulosic Man-Made Fibers Production in the United States: 1958

Item		Average value per pound
Raw cotton (1 billion pounds)[1]		$0.332
Input chiefly of farm resources:		
Includes 150 million man-hours of farm labor		
Requires 2.3 million acres of cotton land		
Cellulosic man-made fibers (1 billion pounds)[2]		0.530
Input of raw materials (per pound of man-made fiber):		
Pulpwood	$0.027	
Cotton pulp	0.007	
Chemical raw materials	0.036	
Energy materials	0.036	
Total raw materials input		0.106
Requires use of: About 1 million acres of forest land		
15 million man-hours of direct labor		
Considerable fixed capital facilities		
Value added by manufacture (per pound of man-made fiber)		0.424
At cellulosic man-made fiber plants	$0.286	
At manufactured materials plants (wood pulp, cottonseed oil, chemicals, electric utilities, petroleum refining)	0.138	
Requires use of: 70 million man-hours of direct labor		
Considerable fixed capital facilities		

[1] Source: U.S. Department of Agriculture, Agricultural Statistics 1961 (1962) tables 86 and 670.

[2] Source: Based primarily on statistics in Bureau of the Census, Census of Manufactures: 1958, Vol. II, Statistics by Industry (1961) and Census of Mineral Industries: 1958, Vol. I, Summary and Industry Statistics (1961).

Chapter 6.--FOREIGN TRADE IN RAW MATERIALS

As a young nation early in the last century, the United States exported about two-thirds to three-quarters of crude materials and the remainder of manufactures and semimanufactures (see table 10). Throughout most of the period since then, the proportion of crude materials among our exports has been declining and the proportion of manufactures and semimanufactures rising. However, since World War II, crude materials have remained at about one-fifth of total exports.

In terms of physical volume, raw materials exported in 1960 and 1961 were about double the quantity exported at the opening of the century, most of the increase taking place after 1945 (see appendix A, table A3). The composition of exports, also, has changed. Agricultural exports declined after the 1920's, but during the last decade rapidly increased, accounting for most of the expansion in raw materials exports after 1945. Minerals exports expanded somewhat throughout most of the period, while forest products exports declined.

The change in the character of total imports, for much of the period, has been just the reverse of the change for exports. In 1820, about five-sixths of the total current value of imports into the United States consisted of manufactures and semimanufactures and only one-sixth of crude materials. For the next century, the share of crude imports increased while the proportion of manufactures and semimanufactures declined to the point where each group accounted for roughly half of the total throughout most of the period 1910-1950. During the last decade, crude materials, as a percent of total, declined to only 32 percent in 1960 and 1961, the same percentage as prevailed in the 1870's. However, in terms of current dollar aggregates, crude imports have changed little in the last decade. The physical volume of imports of raw materials has grown since 1900 by more than fivefold with all major groups of products contributing to the rise (see appendix A, table A2).

The change in the trade balance has been equally significant, reflecting changes in both imports and exports. Throughout the 19th century and down to the first World War, the United States was a net exporter of raw materials (see table 10). Since that time (except for the period 1920-1924), it has been a net importer of crude materials and until recently to an increasing degree. With regard to manufactured and semimanufactured products, on the other hand, from earliest records down to the 1890's, the United States was a net importer. From that time on, it has been a net exporter of such products to an increasing extent. Until about 1870, the net export balance of raw materials paid for much, but usually not all, of our net imports of manufactures and semimanufactures. Today, as a result of our industrialization, the situation is reversed with the net exports of our manufactures and semimanufactures much more than covering our net imports of crude materials.

NET IMPORTS, NATIONAL SECURITY, AND INTERDEPENDENCE OF NATIONS

The nation's imports of more and more raw materials and its ability to fabricate them increasingly reflect our rising standard of living. Nevertheless, though not drastic in the aggregate, our growing reliance on imports of certain individual raw materials in the last half century is pronounced. In our dependence upon raw materials from foreign sources, we much recognize that such materials are generally available only from friendly countries. In times like the present, only those countries of the free world can be counted as sources.

Many vital defense materials are imported from foreign countries. National security considerations have indicated for them as a necessary precaution the desirability of certain measures such as stockpiling and the provision of domestic reserve capacity. These measures, however, raise difficult problems of balances between domestic and foreign sources in the unused capacity not required in peacetime for producing such materials.

Furthermore, the procurement of domestic materials is largely a business matter involving only domestic economic problems. By contrast, the procurement of materials from foreign sources, especially if the latter are controlled by other governments, may require tedious and difficult international negotiations in settings dominated by the many conflicting currents of world politics. Oil from the Middle East is a case in point. In the future, therefore, the insuring of adequate supplies of raw materials may increasingly involve statemanship as well as business management.

Growing dependence upon foreign raw materials supplies tends to link the economies of our major foreign suppliers closer to the American economy and to cause them to reflect the variations in economic activity occurring in the United States. In many instances, such as Venezuela which depends heavily on the United States as a purchaser of its petroleum, the mutual advantages of this trade have been great.

As more countries become industrialized, the interdependence of nations and increasing pressures on limited supplies of raw materials will become more pronounced unless advances in technology can compensate by provision of methods to use materials more efficiently and sutstitute the more abundant for the scarcer materials.

INCREASING USE OF IMPORTED MATERIALS

At the beginning of the century, the United States was largely independent of foreign raw materials; the chief exceptions were pulpwood (which came from Canada), certain chemical materials, such nonferrous metals as manganese, nickel (also from Canada), tin, and certain agricultural materials

Table 10.--Average Annual Imports and Exports of Crude and Manufactured Products for the United States: 1820-1961

Year or period[1]	Imports[2]					Exports					Net imports[3] (millions of dollars)		
	Total (millions of dollars)	Crude products		Manufactures and semimanufactures		Total (millions of dollars)	Crude products		Manufactures and semimanufactures		Total	Crude products	Manufactures and semi-manufactures
		Millions of dollars	Percent of total	Millions of dollars	Percent of total		Millions of dollars	Percent of total	Millions of dollars	Percent of total			
1961..............	14,357	4,597	32.0	9,760	68.0	20,629	4,443	21.5	16,186	78.5	-6,272	154	-6,426
1960..............	14,650	4,732	32.3	9,918	67.7	20,349	4,233	20.8	16,116	79.2	-5,699	499	-6,198
1955-1959.........	12,907	4,963	38.5	7,944	61.5	18,043	3,581	19.8	14,462	80.2	-5,136	1,382	-6,518
1950-1954.........	10,265	4,814	46.9	5,451	53.1	14,141	3,020	21.4	11,121	78.6	-3,876	1,794	-5,670
1945-1949.........	5,655	2,762	48.8	2,893	51.2	11,561	2,334	20.2	9,227	79.8	-5,906	428	-6,334
1940-1944.........	3,164	1,600	50.6	1,564	49.4	8,792	586	6.7	8,206	93.3	-5,628	1,014	-6,642
1935-1939.........	2,340	1,049	44.8	1,291	55.2	2,828	763	27.0	2,065	73.0	-488	286	-774
1930-1934.........	1,912	858	44.9	1,054	55.1	2,297	731	31.8	1,566	68.2	-385	127	-512
1925-1929.........	4,267	2,159	50.6	2,108	49.4	4,895	1,590	32.5	3,305	67.5	-628	569	-1,197
1920-1924.........	3,661	1,697	46.4	1,964	53.6	4,963	1,819	36.7	3,144	63.3	-1,302	-122	-1,180
1915-1919.........	2,791	1,520	54.5	1,271	45.5	5,621	1,499	26.7	4,122	73.3	-2,830	21	-2,851
1910-1914.........	1,689	798	47.2	891	52.8	2,131	840	39.4	1,291	60.6	-442	-42	-400
1905-1909.........	1,257	577	45.9	680	54.1	1,707	693	40.6	1,014	59.4	-450	-116	-334
1900-1904.........	919	418	45.5	501	54.5	1,403	600	42.8	803	57.2	-484	-182	-302
1900..............	850	380	44.7	470	55.3	1,371	566	41.3	805	58.7	-521	-186	-335
1890-1899.........	757	324	42.8	433	57.2	954	466	48.8	488	51.2	-197	-142	-55
1880-1889.........	680	247	36.3	433	63.7	748	412	55.1	336	44.9	-68	-165	97
1870-1879.........	512	165	32.2	347	67.8	530	308	58.1	222	41.9	-18	-143	125
1860-1869.........	324	85	26.2	239	73.8	233	136	58.4	97	41.6	91	-51	142
1850-1859.........	266	55	20.7	211	79.3	214	145	67.8	69	32.2	52	-90	142
1840..............	98	27	27.6	71	72.4	112	81	72.3	31	27.7	-14	-54	40
1830..............	63	12	19.0	51	81.0	59	40	67.8	19	32.2	4	-28	32
1820[4]............	55	9	16.4	46	83.6	52	34	65.4	18	34.6	3	-25	28

---

[1] Prior to July 1, 1915 represents a fiscal year; for all later periods represents a calendar year.
[2] Represents "general imports" through 1932 and "imports for consumption" thereafter.
[3] The minus sign (-) indicates a net export.
[4] Import figures are for the year 1821; export figures for 1820.

Source: U.S. Department of Commerce, Bureau of the Census.

not produced in the United States such as coffee, tea, cocoa, rubber, and silk. In the aggregate, however, there was a net export surplus of domestic raw materials equal to 5 percent of domestic consumption (see chart 8 and table 11).

By the sixth decade of the century, domestic output of raw materials was less than domestic consumption by an average of 9 percent. Domestic production was supplemented by net imports of agricultural products equal to 6 percent of consumption, fishery and wildlife products amounting to 39 percent of consumption, forest products equal to 10 percent of consumption, and by minerals amounting to 13 percent of consumption. The only major classification of raw materials for which consumption exceeded domestic production by less than 1 percent was livestock products. Of the major products and product groups shown separately in table 11, only coal showed average net exports for the period 1950-1959.

Our greatest dependence upon foreign sources of supply is, of course, for those materials not produced in this country to any extent, such as tea, coffee, cocoa, bananas, shellac, diamonds, tin, nickel (from Canada), and other important materials. With regard to major classifications of materials, we are most dependent on imports for metals, pulpwood (from Canada), and fishery products. Over the present century, domestic production as compared to consumption has changed from net exports to net imports in the case of agricultural crops, livestock, sawlogs, other forest products, except pulpwood, metals other than iron and ferroalloys, and oil and gas.

A reversal of the increasing net imports trend is notable, however, for some commodities: crops net imports decreased from 21 percent in 1940-1949 to 3 percent in 1960-1961; pulpwood from 52 percent in 1920-1929 to 23 percent in 1960-1961; and miscellaneous nonmetallic minerals from 15 percent in 1940-1949 to 8 percent in 1960-1961.

Such ratios as those appearing in table 11 have sometimes been called "scarcity factors" since they provide a measure for each succeeding period of the extent to which the domestic economy was dependent on foreign sources for the commodities used. Such ratios are presented in greater detail for metal ores in table 31.

Table 11.--Net Imports of Raw Materials as Percentages of Domestic Consumption for the United States: Decade Averages 1900-1959 and 1960 and 1961

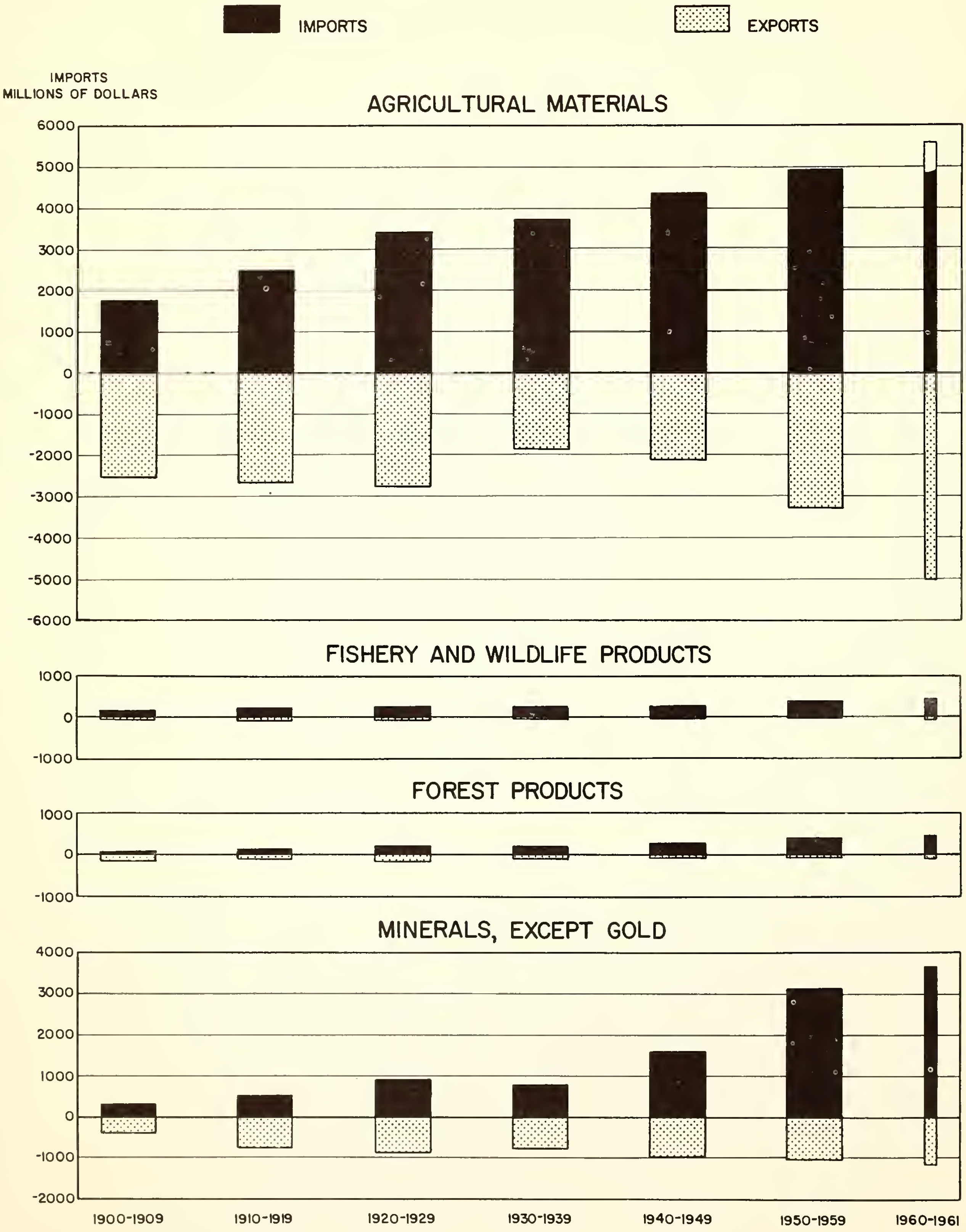
Product	1961	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All raw materials, except gold	7.48	7.35	9.10	8.20	7.45	3.12	-1.37	-4.69
All agriculture materials	2.10	1.85	6.02	9.28	9.83	3.70	-1.49	-6.67
Crops	2.85	2.81	13.10	21.29	18.43	6.25	-2.20	-7.88
Livestock	1.57	1.18	0.89	-0.18	2.95	1.73	0.94	-5.70
All fishery and wildlife products	47.41	43.55	38.74	29.57	30.62	31.71	24.65	21.73
Fishery products	50.22	47.19	39.57	18.27	24.23	25.87	23.49	19.68
Wildlife products	35.58	28.93	35.62	55.71	51.46	54.55	30.30	29.79
All forest products	10.98	10.15	9.59	5.69	2.31	0.95	-1.14	-2.86
Sawlogs	9.95	8.55	6.24	1.77	-3.59	-2.52	-2.31	-2.66
Pulpwood	22.70	23.08	29.62	34.56	50.92	52.28	34.95	25.49
Other forest products, total	3.98	2.99	1.86	0.12	-2.48	-2.01	-2.35	-4.59
Fuel wood	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other than fuel wood	4.88	3.73	2.31	0.25	-9.36	-5.70	-6.72	-11.24
All minerals, except gold	13.98	14.27	12.84	5.40	0.63	0.74	-3.10	-1.54
Iron and ferroalloy ores	36.57	34.51	39.64	22.65	16.34	13.48	7.43	14.22
Other metal ores, except gold	37.02	41.41	51.39	43.97	34.87	13.17	-4.75	-1.53
All mineral fuels	12.12	11.72	6.05	-2.91	-5.33	-3.13	-6.01	-5.87
Coal	-9.58	-9.46	-11.69	-6.79	-2.87	-4.37	-4.27	-2.60
Oil and gas	15.62	15.36	10.19	-0.82	-7.12	-1.50	-12.42	-26.94
Construction materials	4.21	4.62	5.70	6.16	4.23	4.17	2.33	1.18
Other nonmetallic minerals	7.17	8.36	12.07	15.40	9.62	15.	24.07	34.54

Source: Based on appendix A, tables A2, A3, and A11.

Note: A minus sign (-) indicates a net export.

CHART 8.-AVERAGE ANNUAL GROSS IMPORTS AND EXPORTS OF RAW MATERIALS FOR THE UNITED STATES: 1900-1961

(Millions of constant 1954 dollars)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Chapter 7.--RAW MATERIALS PRICES

Prices are influenced not only by the basic magnitudes of supply and demand but also by political pressures and the development of technology in the industries that produce, transport, and consume raw materials. In addition, price controls, subsidies, and tariff policies have significantly influenced raw materials prices. For an increasing standard of living, the favorable conditions are either that prices of individual raw materials decline, relative to the price level, or that technology compensates for increased unit costs by reduction in quantities of raw materials needed (perhaps by reductions in waste and by reuse), by substitutions of other cheaper materials, or by economies at later stages of production.

Apart from the possible threat to national security which might arise from the lack of domestic supplies of essential materials, the major concern associated with the growing pressure of raw materials requirements upon domestic resources has been the effect on the standard of living. The fear was that as the cream was skimmed from our natural resources and as we resorted to supplies of progressively lower quality and growing inaccessibility, the costs of extraction would rise correspondingly. In this way, an increasing proportion of the creative efforts of the work force might be required merely to produce raw materials and the average level of living might suffer.

The drains on the Nation's natural resources, imposed by recent periods of crisis, have given some opportunity for such raw materials cost trends to appear during the first half of the 20th century. However, these trends were, in general, more than offset by other developments. Most important of these developments was rising productivity reflecting increasing application of technology and the increasing amounts of energy available to each worker (see chapter 8). Another important factor has been the growing reliance on foreign supplies.

RAW MATERIALS PRICES RELATED TO ALL WHOLESALE AND FINISHED COMMODITIES PRICES

A rise in the cost of raw materials, relative to the general price level, might reflect, for example, a decline in output per man-hour in the raw materials industries or increased unit inputs of such items as energy and capital equipment. Available evidence indicates, however, that production per man-hour and productivity of all these factors combined has gone up rather than down in agriculture and mining, even though nonlabor inputs have increased relative to production.

Long-term price comparisons must be made with caution, since particularly for highly fabricated products available price measures tend to inadequately

Table 12.--Price Indexes for All Wholesale Commodities, Finished Commodities, and Raw Materials in the United States: 5-Year Periods and Selected Years, 1900-1961

(1954 = 100)

Year or period	All wholesale commodities[1]	Finished commodities[1]	Raw materials[1]			
			All raw materials	Agricultural materials	Forest products	Minerals, except gold
1961	108	110	98	92	99	107
1960	108	110	99	93	104	107
1955-1959	105	106	99	94	105	106
1950-1954	100	98	101	106	101	94
1950	93	91	95	100	96	87
1945-1949	81	83	84	93	73	71
1940-1944	55	58	53	59	40	47
1935-1939	47	47	38	41	28	40
1930-1934	43	46	33	34	23	35
1929	56	56	52	59	29	47
1925-1929	58	58	52	59	30	50
1920-1924	64	66	54	56	37	61
1920	90	88	73	76	55	80
1915-1919	64	61	53	62	25	49
1910-1914	40	41	34	40	17	29
1905-1909	37	38	30	33	16	28
1900-1904	34	35	26	28	13	29

[1] For sources see appendix B. The figures are from table B1. The raw materials figures exclude prices for fishery and wildlife products and gold.

Table 13.--Price Indexes for Finished Commodities and Raw Materials Relative to All Wholesale Prices in the United States: 5-Year Periods and Selected Years, 1900-1961

(1954 = 100)

Year or period	Finished commodities[1]	Raw materials[1]			
		All raw materials	Agricultural materials	Forest products	Minerals
1961	102	91	85	92	99
1960	102	92	86	96	99
1955-1959	101	94	90	100	101
1950-1954	98	101	106	101	94
1950	98	102	108	103	94
1945-1949	102	104	115	90	88
1940-1944	105	96	107	73	85
1935-1939	100	81	87	60	85
1930-1934	107	77	79	53	81
1929	100	93	105	52	84
1925-1929	100	90	102	52	86
1920-1924	103	84	88	58	95
1920	98	81	84	61	89
1915-1919	95	83	97	39	77
1910-1914	102	85	100	42	72
1905-1909	103	81	89	43	76
1900-1904	103	76	82	38	85

[1] Derived from table 12 by expressing the price indexes for finished commodities and raw materials as percentages of the corresponding price indexes for all wholesale commodities. The raw materials figures exclude prices for fishery and wildlife products and gold.

allow for increases in quality. Hence, there is probably a cumulative upward bias in price indexes of finished commodities relative to those of raw materials. The price comparisons in the following paragraphs use the available measures essentially as though such biases were not significant.

Prices of most major raw materials groups have tended to rise over the first half of the present century, relative to all wholesale prices, but this trend was reversed after 1952, particularly for agricultural materials. (See chart 9 and tables 12 and 13.)

Likewise, there appears to be a long-range faster rise in prices of raw materials than of finished products; nevertheless, raw material costs have not become a larger portion of the total cost of final products. As shown in table 2, income originating in the raw materials industries constituted 12 percent of total national income in 1929 (the first year for which Office of Business Economics income data are available), but only 6 percent in 1960, a 41 percent decline taking place between 1950 and 1960. In the decade between 1919 and 1929, roughly comparable figures from the National Bureau of Economic Research indicate a similarly striking decline, from 19 percent of total national income in 1919 to 11 percent in 1929.[1] As discussed in chapter 3, this decline reflects the increased fabrication of finished commodities. Thus, income originating in the raw materials industries was 29 percent of total income originating in all commodity-producing industries in 1929, but had dropped to 23 percent by 1950 and to 15 percent by 1960, while the proportion of income originating in manufacturing and contract construction increased. Note, however, that the 1919-1929 and 1950-1960 periods of most rapid decline in the proportion of national income originating in the raw materials industries were both periods of stability or slight decline of raw materials prices relative to all wholesale prices.

PRICES RELATED TO PERSONAL INCOME IN THE RAW MATERIALS INDUSTRIES

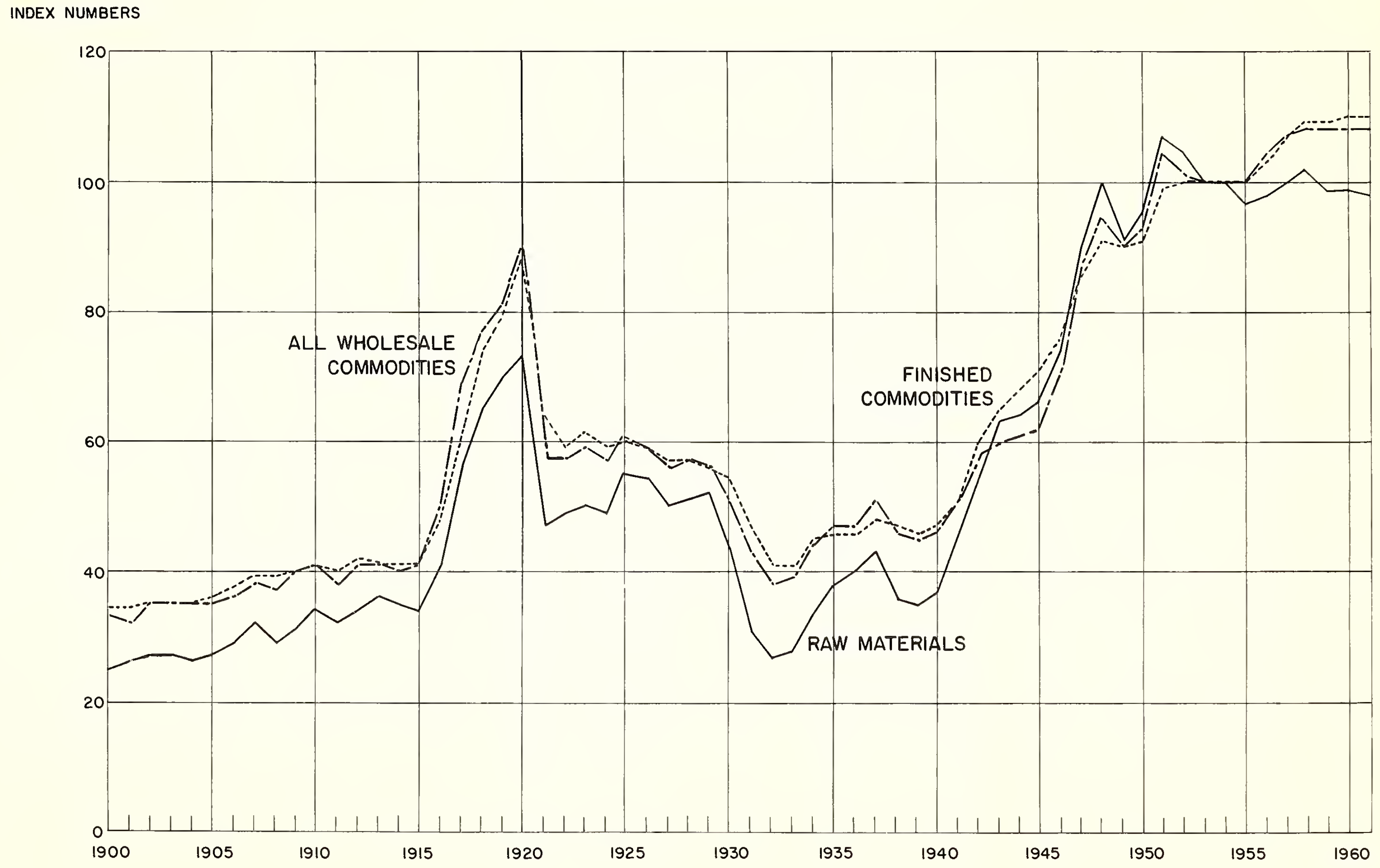
The more rapid rise of prices of raw materials than of finished commodities prior to 1951 reflects, in part, the improved relative income status of the persons engaged in these industries. Because of the pronounced rise in income per worker and technology in raw materials industries, the income originating there has shrunk on a relative basis considerably less than the shrinkage in number of workers. As shown in table 14, the average income from personal employment in raw materials industries, in current dollars, gained about twice as much as employment income earned in other industries between 1929 and 1951. In the 1951-1961 decade, however, as raw materials prices declined relative to finished commodities, personal income in the raw materials industries increased by only 19 percent, as compared to 49 percent for other industries. Nevertheless, in 1961 the average income per person engaged was higher in metal mining than for any other major group shown in table 14, and average income for both oil and gas extraction and bituminous coal mining exceeded that for manufacturing. The relatively low average income for all raw materials industries reflects the low averages for agriculture, forestry, and fishing. Moreover, in the last decade, as agricultural prices dropped, average personal income in agriculture increased less than for any other group shown.

---

[1] Based on Simon Kuznets, National Income and Its Composition, 1919-1938, National Bureau of Economic Research, New York (1947), pp. 326-327.

CHART 9.-PRICE INDEXES FOR RAW MATERIALS, FINISHED COMMODITIES, AND ALL WHOLESALE COMMODITIES IN THE UNITED STATES: 1900-1961

(Index numbers: 1954=100)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Table 14.--Average Income From Personal Employment, for Industry Groups and Selected Industries in the United States 1961 and Percent Increases From 1929 and 1951

(Industries ranked by average personal income)

Industry group and industry	Average income per person engaged[1]				
	Total dollars in 1961	Percent increase		Percent of all industries average	
		1951-1961	1929-1951	1961	1929
All industries	5,211	48	148	100	100
Raw materials industries	3,746	19	255	72	62
All other industries	5,349	49	127	103	111
Metal mining	7,011	71	158	135	112
Wholesale trade	6,826	47	104	131	160
Communications and public utilities	6,558	69	158	126	106
Transportation	6,463	52	156	124	116
Oil and gas extraction	6,425	32	124	123	152
Bituminous coal and lignite mining	6,290	42	237	121	92
Manufacturing	6,103	56	146	117	112
Lumber and wood products, except furniture[2]	4,165	36	154	80	84
Paper and allied products[2]	5,817	58	162	112	106
Finance, insurance, and real estate	5,795	58	167	54	111
Nonmetallic minerals mining	5,613	55	158	108	98
Government and government enterprises	5,296	62	105	102	112
Contract construction	5,256	48	122	101	112
Anthracite mining	5,188	40	110	100	124
Services	4,410	58	112	85	92
Retail trade	4,111	19	150	79	97
Agriculture	3,405	15	266	65	57
Forestry[3] and fisheries	3,132	52	216	60	46

---

[1] Represents compensation of employees plus income of unincorporated enterprises, including inventory adjustment, divided by total number of persons engaged in production.

[2] Although included in the manufacturing total, about one-half of the employees in the "Lumber and wood products, except furniture" industries and one-third of the employees in the "Paper and allied products" industries are engaged in timber harvesting - a raw materials producing activity. See U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963).

[3] Excludes a major portion of forest harvesting which is included in the lumber and paper products manufacturing industries. See also footnote 2.

Source: U.S. Department of Commerce, Office of Business Economics.

RICES RELATED TO THE KINDS OF RAW MATEIALS CONSUMED AND PRODUCTIVITY

Two factors already mentioned have prevented he relatively faster increasing prices of raw mateials from becoming a larger share of total cost of he final products. The major factor is the increasing egree to which each unit of raw materials consumed y industry has been fabricated. The other is the hanging composition of the aggregate raw materials ix consumed in the national economy during the eriod covered--a shift in the direction of proporionately increased consumption of raw materials hose prices have relatively fallen and smaller proortionate consumption of those whose prices have elatively risen (see table 3 and chart 10, also hart 2).

A comparison of production and relative price hanges is of interest. To a considerable extent, he long-term changes in raw materials prices over the half century, relative to the general price level, appear to bear an inverse relationship to the growth of production. Also, on a shorter term basis, this relationship is frequently notable. (For the last decade see the table below and chart 2 for the behavior of agricultural materials, forest products, and metallic minerals.) This production-relative price relationship, however, is less striking and operates at a different level when there is a stimulated demand for the commodities, such as for pulpwood, mineral construction materials, and, for the earlier period shown, iron and ferroalloy ores.

Differences in the rates of change in production per man-hour have significantly influenced the relative changes in prices of various commodities. Thus, the much slower rise in agricultural productivity than in that for minerals in the first four decades of the century contributed to the greater rise in agricultural prices in that period, whereas the very rapid increase in production per man in the last two decades is reflected in the falling prices of agricultural products. For the mineral industries, the two decades of relative price stability or decline, the 1920's and the 1950's, are periods of exceptional increases in output per worker. (See chapter 8.)

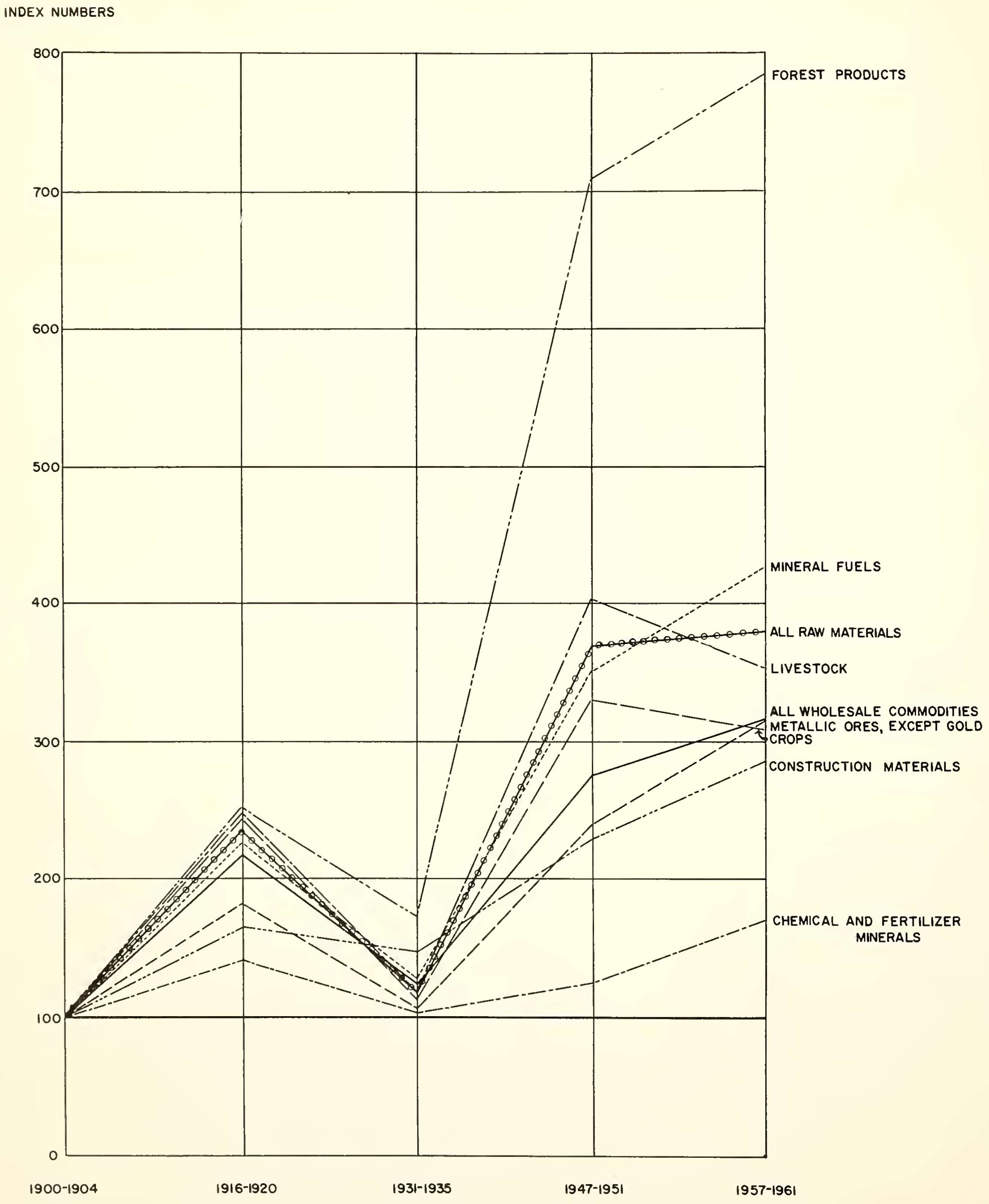
There was also a tendency for raw materials with relatively high net imports, as compared with consumption, to rise in relative price from the beginning to the middle of the century. Examples are certain ores, pulpwood, coffee, and bananas. Nevertheless, there are striking exceptions to this trend, particularly in the later years where such products competed with synthetic materials.

PRODUCTION AND RELATIVE PRICE CHANGES FROM PERIOD 1900-1904 TO 1950-1954 AND PERIOD 1950-1954 TO 1957-1961

Raw materials groups (ranked according to output increases)	Percent change between 1900-1904 and 1950-1954		Percent change between 1950-1954 and 1957-1961	
	Production	Relative price	Production	Relative price
All raw materials, except gold..	119	33	13	-9
Chemical and fertilizer minerals....	1,412	-50	24	8
Pulpwood........................	1,016	19	29	3
Abrasives and miscellaneous minerals........................	440	-31	24	65
Mineral construction materials.....	278	19	48	5
Iron and ferroalloy ores...........	257	22	-15	7
Oil and gas extraction.............	176	-17	20	10
Other metal ores..................	125	-13	1	-2
Livestock........................	110	34	14	-16
Crops...........................	74	17	16	-17
Coal............................	47	59	-14	-8
Sawlogs.........................	-7	190	-10	0

CHART 10.-PRICE CHANGES FOR RAW MATERIALS GROUPS IN SELECTED PERIODS FOR THE UNITED STATES FROM 1900 TO 1961

(Index numbers: 1900-1904=100)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Chapter 8.--PRODUCTIVITY IN RAW MATERIALS PRODUCTION

One of the most striking characteristics of the raw materials industries in the decade of the 1950's is the unheralded acceleration of rising production per worker. For agriculture, the increase in production per unit of labor input between 1948 and 1957 was about 65 percent, with another 24 percent added between 1957 and 1961.[1] For the mineral industries, the 1948-1957 increase was 44 percent. Production per person engaged in forest management and harvesting appears to have increased between 1954 and 1958 by 17 percent. For the national economy as a whole, the increase in production per unit of labor input for 1948-1957 was only 27 percent, and for manufacturing, 33 percent.

During most of the first four decades of this century, there had been little increase in agricultural production per unit of labor input, but between 1937 and 1948 it increased by about 51 percent. For the mineral industries, two earlier decades had indicated very rapid increase in productivity of labor--1919-1929, with an increase of 51 percent, and 1929-1937, with 32 percent; during the 1937-1948 period, the increase for minerals dropped to 14 percent.

Production per worker or per man-hour, nevertheless, is only one aspect of productivity. Adequate statistics are not available to measure all major input factors for the raw material industries, but considerable data are available on the input of equipment and on energy use. Output per unit of capital input and "factor productivity" which provides a combined measure of "productivity" of labor and capital are shown in table 15. Factor productivity shows lower increases in almost all periods than output per unit of labor input, but confirms the striking increase in efficiency of agricultural operations in the last two decades, and in mineral operations in the third and fourth decades of the century.

---

[1] For 1957-1961 based on the U. S. Department of Labor, Bureau of Labor Statistics, Indexes of Output per Man-Hour for the Private Economy, 1947-61, (November 1962). For earlier years, see table 15.

Table 15.--Changes in Output Per Unit of Labor Input, Output Per Unit of Capital Input, and Factor Productivity for the National Economy, Agriculture, Mineral Industries, and Manufacturing Industries: Selected Periods 1899-1957

Period	Percent increase in[1]--											
	Output per unit of labor input				Output per unit of capital input				Factor productivity			
	National economy	Raw materials		Manufacturing industries	National economy	Raw materials		Manufacturing industries	National economy	Raw materials		Manufacturing industries
		Agriculture	Mineral industries			Agriculture	Mineral industries			Agriculture	Mineral industries	
1899-1957	191	202	329	275	64	7	[2]103	[2]69	150	113	[2]216	[2]191
1948-1957	27	65	44	33	-1	-2	(NA)	(NA)	20	39	(NA)	(NA)
1953-1957	10	22	14	14	-3	6	(NA)	(NA)	7	16	(NA)	(NA)
1948-1953	15	35	27	16	3	-7	-1	4	13	20	16	11
1937-1948	23	51	14	17	32	5	7	26	25	34	11	19
1929-1937	14	7	32	16	10	6	60	21	13	7	40	17
1919-1929	26	13	51	72	9	13	16	52	21	13	41	68
1909-1919	7	0	18	8	0	-7	4	-18	9	-3	15	3
1899-1909	14	0	11	12	5	-7	-1	-15	12	-2	8	7

[1] Based on National Bureau of Economic Research, John W. Kendrick, Productivity Trends in the United States (1961), Princeton University Press, tables A-XXI, B-I, C-I, C-II (for 1957 only), and D-I.
[2] Represents the period 1899-1953.

The relative importance of labor, capital, and other input factors varies widely among industries. The measures of raw materials production constructed for this report and gross national product (GNP) have been compared with statistics from census and other sources on labor used for the census years 1939, 1954, and 1958 (see table 16). In terms of 1954 dollars, the value of production per person engaged in mineral production in 1958 was $18.3 thousand; for forestry, $6.1 thousand; and for agriculture, $3.7 thousand; as compared for GNP to $6.2 thousand. Corresponding figures for 1939, in terms of 1954 dollars, were for mineral production, $9.4 thousand; for agriculture, $1.6 thousand; and for GNP, $4.1 thousand. Among mineral operations there is likewise a wide variation. In 1958, production per person engaged in the chemical and fertilizer minerals industries was $27.4 thousand and for oil and gas extraction, $26.0 thousand; but only $15.9 thousand for iron and ferroalloy ores, $14.3 thousand for other metal ores, $14.4 thousand for mineral construction materials, and $9.4 thousand for coal mining.

FACTORS CONTRIBUTING TO PRODUCTIVITY IN THE MINERAL INDUSTRIES

The very high dollar volume of production per unit of labor input in the mineral industries relative to that for other industry groups shown in table 16 reflects the high mechanization of mineral operations which, in turn, is reflected in high capital requirements. In 1954, the mineral industries used 45 horsepower per production worker, excluding highway-type equipment, as compared to 9.6 for all manufacturing industries.[2] Horsepower per thousand dollars value added in mineral industries in 1954, excluding highway-type equipment, amounted to 2.5 as compared to 0.9 for all manufacturing industries. Moreover, horsepower per production worker increased between 1939 and 1954 by 250 percent in the mineral industries, but by only about 50 percent in the manufacturing industries. Horsepower per production worker for each major group of the mineral industries was considerably higher in 1954 than the average for manufacturing industries. Including highway-type equipment, this ratio varied from 85 for oil and gas extraction, 79 for nonmetallic minerals mining, and 62 for metal mining, to 34 for coal mining (see table 17). Each major minerals group shows a two- to three-fold increase in horsepower per production worker between 1939 and 1954, and the highest rate of increase is for coal mining. Nevertheless, the even higher rate of increase for all mineral industries reflects the relative decline in coal mining with its smaller horsepower use factor and the relative increase in oil and gas extraction with its very high horsepower factor.

High production per employee in the mineral industries is associated with high capital expenditures. For all mineral industries, capital expenditures in 1958 amounted to 21 percent of value added, and to 24 percent in 1954, as compared to 7.1 percent for all manufacturing industries in 1958 and 7.3 percent for 1954. Individual industries, of course, differ greatly in this respect. For the mineral industries in 1958, at the major group level, this ratio varied between 12 percent for coal mining and 24 percent for oil and gas extraction. For the manufacturing industries it varied by major industry group between 2 and 27 percent, but exceeded 9 percent for only four major groups: petroleum and coal products, 27 percent; primary metal industries, 13 percent; paper and allied products, 12 percent; and chemicals and allied products, 11 percent. Energy use in the mineral industries amounted to 718 thousand kwh per production worker in 1958 as compared to 275 for all manufacturing industries. Even water intake per production worker was higher in 1954 for mineral than for manufacturing industries, amounting to 1.12 million gallons for minerals and to 0.95 for manufacturing.

The costs of labor, capital, and energy represent very different proportions of current input requirements for the individual mineral and manufacturing industries. Other major input factors are materials and supplies, rents, and, for mineral industries, royalties. Adequate measures of the materials and supplies component of input are much less readily available than the items discussed above and constitute a high proportion of total input costs for manufacturing. Comparable series are not available for rents or royalties.

Chart 11[3] shows the relation between changing production, employment, and fuels and electric energy use, by major groups, for the mineral and manufacturing industries for the last four census years. For all mineral industries, use of fuels and electric energy has increased between 1939 and 1958 at about the same rate as production, while employment has declined. For all manufacturing industries, energy use has increased less rapidly than production, but labor requirements have also increased, although at a lower rate than energy requirements. The patterns for oil and gas extraction and nonmetallic minerals mining are similar to that for all manufacturing. Both of these groups experienced rapid increases in production during the period. But for the metal mining and coal mining industries, which declined in production after 1947, the patterns were quite different. For metal mining, where mechanization is high and operations are concentrated in large establishments, a rapid increase in energy use was accompanied by an absolute decline in employment. Whereas, for coal mining, energy use and employment declined at about the same rate. Establishments with 100 or more employees accounted for 81 percent of all value added in metal mining in 1958, and for 86 percent in 1954; the corresponding percentages for coal mining were 67 and 69.

For the manufacturing industries, the compensating effect of labor and energy use is notable in all major groups, but most apparent in the high energy consumption industries (see also chart 7). For the chemicals and allied products industries, a production increase of 340 percent between 1939 and 1958, accompanied by an energy use increase of 290 percent, was possible with an employment increase

---

[2] Data on highway-type equipment used in the manufacturing industries are not available, but probably the difference would be even greater if such equipment were included. The mineral industries used 63 horsepower per production worker in 1954 when highway-type equipment is included.

[3] Based on appendix C, table C2, of this report.

Table 16.--Production Per Person Engaged and Production Per Man-Hour for All Industries, Agriculture, Forestry, and Mineral Industry Groups in the United States: 1939, 1954, and 1958

Industry	Production[1] (millions of constant 1954 dollars)	Persons engaged[2] (1,000)	Man-hours of production and development workers[3] (millions)	Production per--	
				Person engaged ($1,000)	Man-hour ($1)
All industries 1958	401,300	64,824	(NA)	6.19	(NA)
1954	363,100	63,351	(NA)	5.73	(NA)
1939	189,300	46,605	(NA)	4.06	(NA)
Agriculture 1958	28,206	7,525	11,103	3.75	2.54
1954	26,087	8,639	14,555	3.02	1.79
1939	18,517	11,338	20,719	1.63	0.89
Forestry 1958	2,586	423	(NA)	6.11	(NA)
1954	2,659	509	(NA)	5.22	(NA)
1939	2,426	(NA)	(NA)	(NA)	(NA)
Minerals, all operations[4] 1958	14,288	782	1,103	18.27	12.95
1954	13,303	842	1,282	15.80	10.38
1939	8,179	872	1,287	9.38	6.36
Metal mining:					
Iron ores and ferroalloy ores 1958	605	38	52	15.92	11.63
1954	691	45	70	15.36	9.87
1939	427	25	43	17.08	9.93
Other metal ores[4] 1958	685	48	71	14.27	9.65
1954	668	55	92	12.15	7.26
1939	712	76	147	9.37	4.84
Mineral fuels:					
Coal mining 1958	2,057	220	299	9.35	6.88
1954	2,039	266	374	7.67	5.45
1939	2,246	484	670	4.64	3.35
Oil and gas extraction 1958	8,647	333	440	25.97	19.65
1954	7,955	336	492	23.68	16.17
1939	3,958	194	265	20.40	14.94
Nonmetallic minerals mining:					
Mineral construction materials[5] 1958	1,594	111	193	14.36	8.26
1954	1,271	108	200	11.77	6.36
1939	601	72	127	8.35	4.73
Chemical and fertilizer minerals 1958	575	21	31	27.38	18.55
1954	563	22	36	25.59	15.64
1939	193	13	21	14.85	9.19
Abrasives and miscellaneous minerals[5] 1958	125	11	17	11.36	7.35
1954	116	10	18	11.60	6.44
1939	42	8	14	5.25	3.00

NA Not available.

[1] For "All industries" represents Gross National Product, from U.S. Department of Commerce, Office of Business Economics. For separate raw materials industries see appendix A, table A1.

[2] For agriculture, represents both family workers and hired workers. For the mineral industries represents both employees and proprietors and firm members. Source: For "All industries" U.S. Department of Commerce, Office of Business Economics. For agriculture, Census of Agriculture and U.S. Department of Agriculture, Agricultural Marketing Service reports. For forestry, U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963). For minerals, Census of Mineral Industries reports.

[3] Except for agriculture, excludes man-hours of proprietors performing manual work. In 1958, for all mineral industries, such proprietors amounted to about 2 percent of the sum of such workers and hired production and development workers. For source see footnote 2.

[4] Excludes data for uranium-radium-vanadium ores.

[5] Represents statistics for the mineral industries and mining operations in manufacturing establishments.

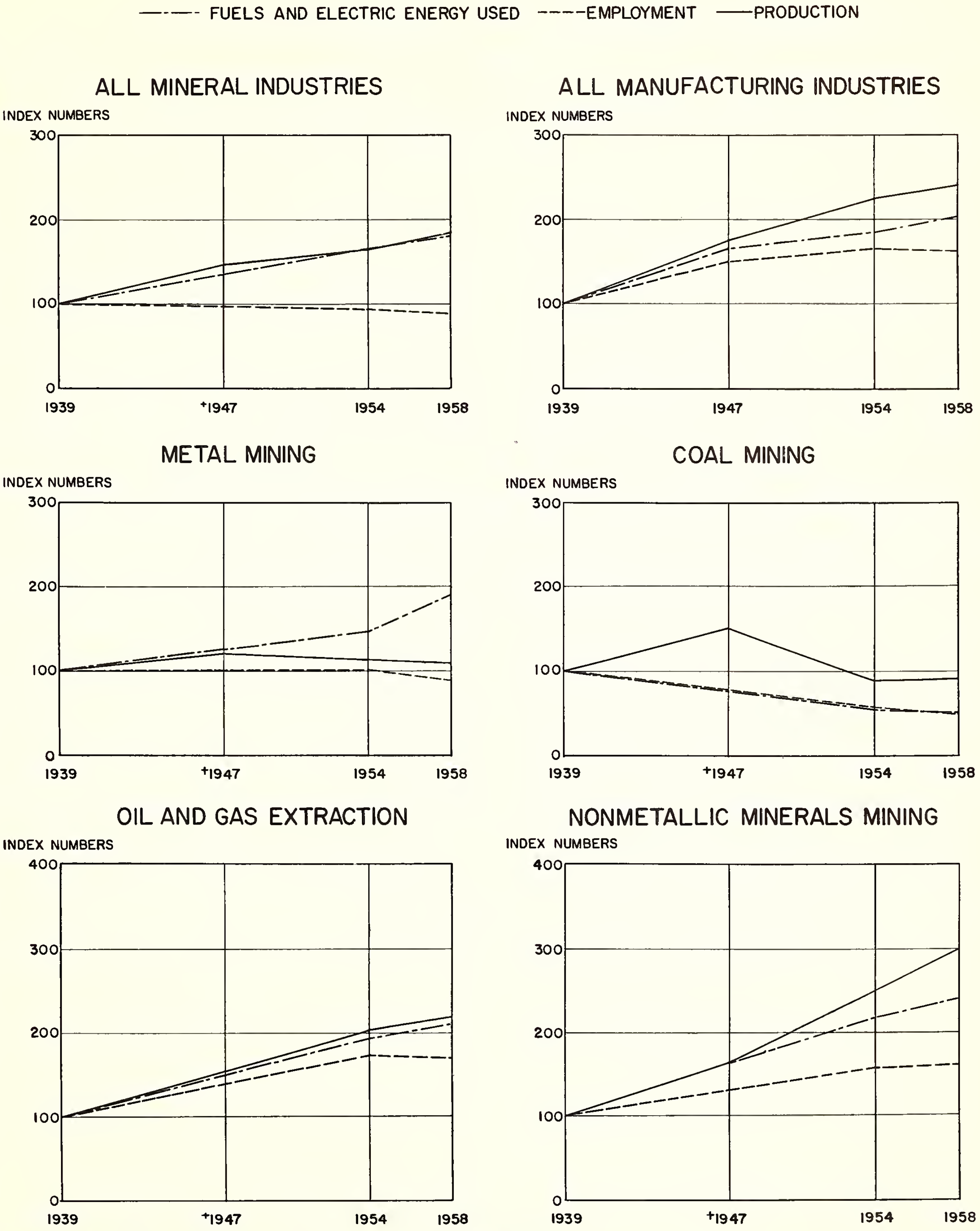
Table 17.--Some Factors Contributing to Varying Productivity in Mineral Industries, by Industry Groups, and for All Manufacturing Industries in the United States: Selected Census Years 1899-1958

Industry and year	Value added		Number of persons engaged[1] (1,000)	Man-hours of production workers[2] (millions)	Value added per--				Energy used per production worker[2]		Horsepower of power equipment per production worker[2]		Water intake		Capital expenditures	
					Person engaged[1]		Man-hour of production workers									
	Millions of current dollars	Percent of all mineral industries			Thousands of current dollars	Percent of all mineral industries	Current dollars	Percent of all mineral industries	1,000 kwh equivalent	Percent of all mineral industries	Horsepower	Percent of all mineral industries	Billion gallons	Percent of all mineral industries	Millions of current dollars	Percent of all mineral industries
All mineral industries........1958...	13,381	100.0	769	1,078	17.4	100	12.4	100	718	100	(NA)	100	(NA)	100.0	2,798	100.0
1954...	11,546	100.0	826	1,249	14.0	100	9.2	100	576	100	63	100	722	100.0	2,724	100.0
1939[3]..	2,680	100.0	872	1,288	3.1	100	2.1	100	291	100	18	100	(NA)	100.0	(NA)	100.0
1919[4]..	2,388	100.0	1,085	(NA)	2.2	100	(NA)	100	[5]253	100	7	100	(NA)	100.0	(NA)	100.0
1909[4]..	915	100.0	1,036	(NA)	0.9	100	(NA)	100	(NA)	100	5	100	(NA)	100.0	(NA)	100.0
1902[6]..	628	100.0	622	(NA)	1.0	100	(NA)	100	(NA)	100	5	100	(NA)	100.0	(NA)	100.0
Metal mining........................1958...	1,187	8.9	94	137	12.6	72	8.7	70	384	53	(NA)	(NA)	(NA)	(NA)	214	7.6
1954...	1,076	9.3	104	168	10.3	74	6.4	69	257	45	62	98	138	19.1	221	8.1
1939...	417	15.6	101	191	4.1	132	2.2	106	163	56	25	139	(NA)	(NA)	(NA)	(NA)
1929...	496	(NA)	126	(NA)	3.9	(NA)	(NA)	(NA)	214	(NA)	15	(NA)	(NA)	(NA)	(NA)	(NA)
1919[7]..	402	16.8	148	(NA)	2.7	123	(NA)	(NA)	[5]247	98	10	143	(NA)	(NA)	(NA)	(NA)
1909[7]..	254	27.8	180	(NA)	1.4	156	(NA)	(NA)	(NA)	(NA)	7	(NA)	(NA)	(NA)	(NA)	(NA)
1902[7]..	168	26.7	134	(NA)	1.3	129	(NA)	(NA)	(NA)	(NA)	5	(NA)	(NA)	(NA)	(NA)	(NA)
Iron and ferroalloy ores..........1958...	581	4.3	38	52	15.3	88	11.2	90	422	59	(NA)	(NA)	(NA)	(NA)	50	1.8
1954...	550	4.8	45	70	12.2	87	7.9	86	200	35	62	98	35	4.8	101	3.7
1939...	150	5.6	25	43	6.0	194	3.5	167	149	51	29	161	(NA)	(NA)	(NA)	(NA)
Other metal ores.................1958...	606	4.6	56	85	10.8	62	7.1	57	358	50	(NA)	(NA)	(NA)	(NA)	164	5.9
1954...	526	4.6	59	98	8.9	64	5.4	59	302	52	63	100	103	14.3	120	4.4
1939...	267	10.0	76	148	3.5	113	1.8	86	167	57	24	133	(NA)	(NA)	(NA)	(NA)
Coal mining.........................1958...	1,774	13.3	220	299	8.1	47	5.9	48	102	14	(NA)	(NA)	(NA)	(NA)	205	7.3
1954...	1,615	14.0	266	374	6.1	44	4.3	47	97	17	34	54	57	7.8	129	4.7
1939...	765	28.5	484	670	1.6	52	1.1	53	93	32	10	56	(NA)	(NA)	(NA)	(NA)
1929[7]..	1,141	(NA)	637	(NA)	1.8	(NA)	(NA)	(NA)	134	(NA)	7	(NA)	(NA)	(NA)	(NA)	(NA)
1919[7]..	1,252	52.4	739	(NA)	1.7	77	(NA)	(NA)	[5]134	53	4	57	(NA)	(NA)	(NA)	(NA)
1909[7]..	462	50.5	684	(NA)	0.7	78	(NA)	(NA)	(NA)	(NA)	3	60	(NA)	(NA)	(NA)	(NA)
1902[7]..	328	52.2	368	(NA)	0.9	89	(NA)	(NA)	(NA)	(NA)	3	60	(NA)	(NA)	(NA)	(NA)
Oil and gas extraction.............1958...	9,035	67.5	333	440	27.1	156	20.5	165	1,451	202	(NA)	(NA)	(NA)	(NA)	2,190	78.3
1954...	7,674	66.5	336	492	22.8	163	15.6	169	1,211	210	85	135	158	22.0	2,226	81.7
1939...	1,242	46.3	194	265	6.4	206	4.7	226	(NA)	(NA)	34	189	(NA)	(NA)	(NA)	(NA)
1919[7]..	614	25.7	126	(NA)	4.9	223	(NA)	(NA)	[5]442	175	20	286	(NA)	(NA)	(NA)	(NA)
1909[7]..	112	12.2	60	(NA)	1.9	211	(NA)	(NA)	(NA)	(NA)	33	660	(NA)	(NA)	(NA)	(NA)
1902[7]..	59	9.4	28	(NA)	21	208	(NA)	(NA)	(NA)	(NA)	45	900	(NA)	(NA)	(NA)	(NA)
Nonmetallic minerals mining.........1958...	1,384	10.3	122	202	11.3	65	6.9	56	508	71	(NA)	(NA)	(NA)	(NA)	189	6.8
1954...	1,182	10.2	120	215	9.8	70	5.5	59	451	78	79	125	369	51.1	147	5.4
1939[3]..	256	9.6	93	162	2.8	90	1.6	77	249	86	29	161	(NA)	(NA)	(NA)	(NA)
1929[3]..	319	(NA)	108	(NA)	3.0	(NA)	(NA)	(NA)	302	(NA)	17	(NA)	(NA)	(NA)	(NA)	(NA)
1919[4]..	120	5.0	72	(NA)	1.7	77	(NA)	(NA)	[5]287	113	8	114	(NA)	(NA)	(NA)	(NA)
1909[4]..	86	9.4	111	(NA)	0.8	89	(NA)	(NA)	(NA)	(NA)	4	80	(NA)	(NA)	(NA)	(NA)
1902[6]..	74	11.8	92	(NA)	0.8	79	(NA)	(NA)	(NA)	(NA)	3	60	(NA)	(NA)	(NA)	(NA)
All manufacturing industries..1958...	141,270	1,055.8	16,181	22,633	8.7	48	6.2	50	275	38	(NA)	(NA)	[8]12,175	(NA)	10,094	360.7
1954...	117,032	1,013.6	16,297	24,334	7.2	49	4.8	52	238	41	[9]10	14	11,570	1,602	8,582	315.1
1939...	24,487	913.7	[10]9,855	(NA)	2.5	81	(NA)	(NA)	203	70	7	33	(NA)	(NA)	(NA)	(NA)
1929...	30,591	(NA)	[10]9,989	(NA)	3.1	(NA)	(NA)	(NA)	217	(NA)	5	(NA)	(NA)	(NA)	(NA)	(NA)
1919...	23,842	998.4	10,087	(NA)	2.4	109	(NA)	(NA)	[5]190	75	3	43	(NA)	(NA)	(NA)	(NA)
1909...	8,160	891.8	7,284	(NA)	1.1	122	(NA)	(NA)	[5]197	(NA)	3	60	(NA)	(NA)	(NA)	(NA)
1899...	4,647	(NA)	[11]5,042	(NA)	.9	(NA)	(NA)	(NA)	(NA)	(NA)	2	(NA)	(NA)	(NA)	(NA)	(NA)

Source: Census of Mineral Industries and Census of Manufactures reports. [1] Includes data for administrative offices and auxiliaries and proprietors and firm members, as well as employees at production, development, or exploration establishments. [2] "Production worker" figures for the mineral industries include production, development, and exploration workers; and for the manufacturing industries, production and related workers. [3] Includes data for mining operations in manufacturing establishments. In 1954, the value added at such operations was $194 million. [4] Excludes data for sand and gravel operations; but includes dimension stone, clay, and gypsum mining operations in manufacturing establishments. The value added at sand and gravel operations in 1929 was $89 million. The value added at dimension stone, clay, and gypsum mining operations in manufacturing establishments in 1954 was $69 million. See also footnote 7. [5] Excludes data for purchased electric energy. For all mineral industries in 1929, purchased electric energy amounted to less than 3 percent of the total kwh equivalent of energy used. [6] Includes data for lime plants producing lime valued at $9 million. See also footnote 4. [7] Excludes data for contract service operations. The number of employees at contract service operations was for metal mining in 1939, 0.7 thousand, in 1902, 2.6 thousand; for coal mining in 1939, 3.1 thousand, and in 1902, 6.9 thousand; for oil and gas extraction in 1939, 39.8 thousand, and in 1902, 11.2 thousand; and for nonmetallic minerals mining in 1939, 0.3 thousand, and in 1902, 0.6 thousand. [8] Represents 1959. [9] Excludes horsepower of highway-type equipment. [10] For 1939, includes an estimate of 204 thousand employees at administrative offices and auxiliaries taken from an unpublished tabulation of the 1939 Census of Manufactures. For 1929, includes 197 thousand such employees; this figure represents a downward adjustment of the reported 208 thousand, adjusted to exclude industries no longer classified as manufacturing. [11] Includes an estimate of 192 thousand proprietors and partners.

CHART 11.-INDEXES OF FUELS AND ELECTRIC ENERGY USE, EMPLOYMENT, AND PRODUCTION IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1939, 1947, 1954, AND 1958

(Index numbers: 1939=100)

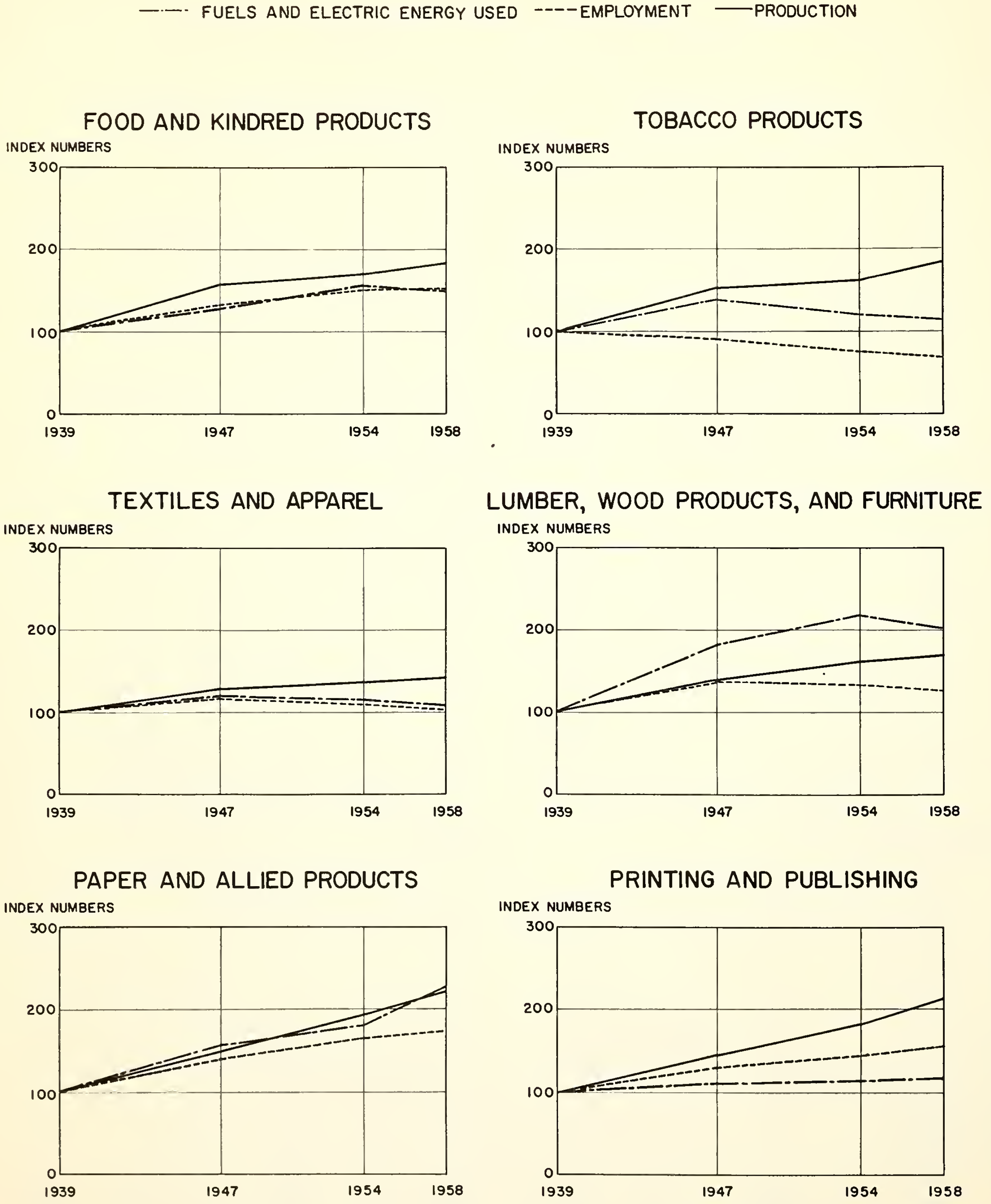


+1947 fuels, electric energy, and employment data not available for these industries

U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

CHART 11. - INDEXES OF FUELS AND ELECTRIC ENERGY USE, EMPLOYMENT, AND PRODUCTION IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1939, 1947, 1954, AND 1958-CONTINUED

(Index numbers: 1939=100)


FOOD AND KINDRED PRODUCTS

TOBACCO PRODUCTS

TEXTILES AND APPAREL

LUMBER, WOOD PRODUCTS, AND FURNITURE

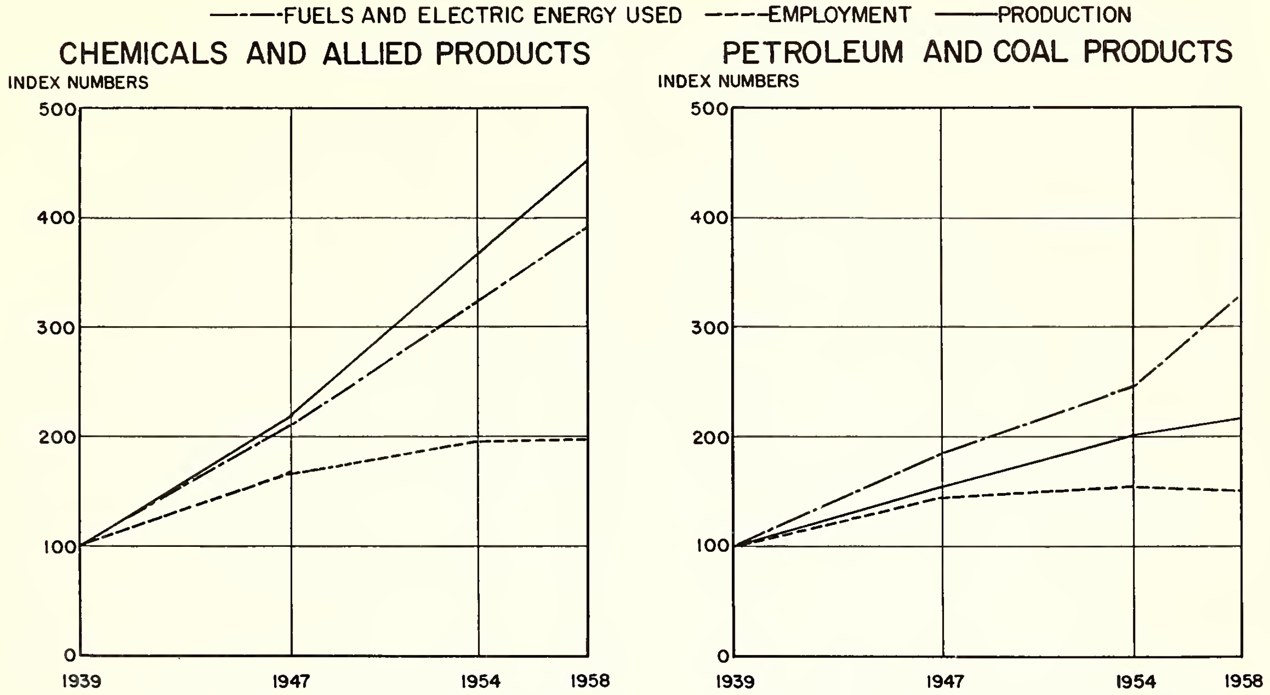
PAPER AND ALLIED PRODUCTS

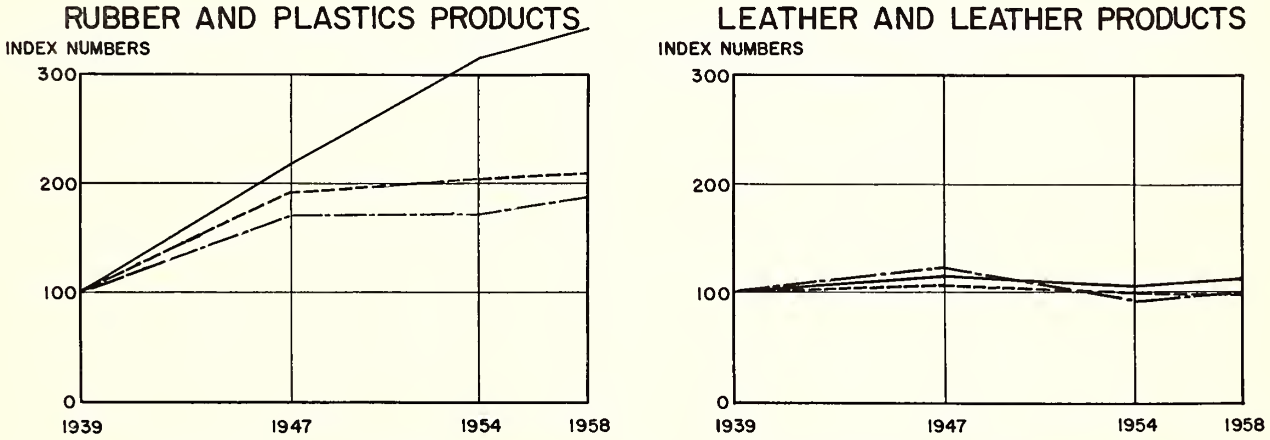
PRINTING AND PUBLISHING

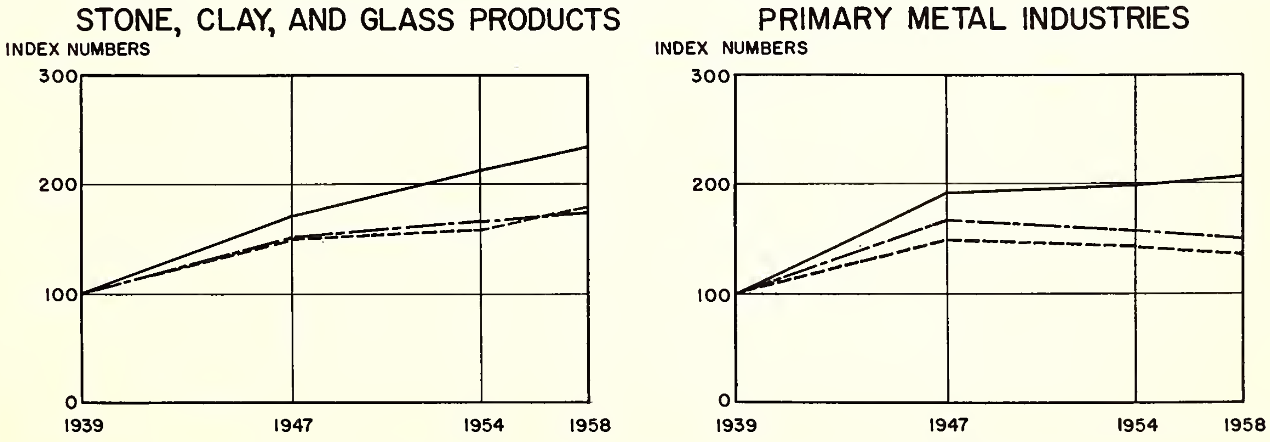
U. S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

CHART 11.-INDEXES OF FUELS AND ELECTRIC ENERGY USE, EMPLOYMENT, AND PRODUCTION IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1939, 1947, 1954, AND 1958-CONTINUED

(Index numbers: 1939=100)



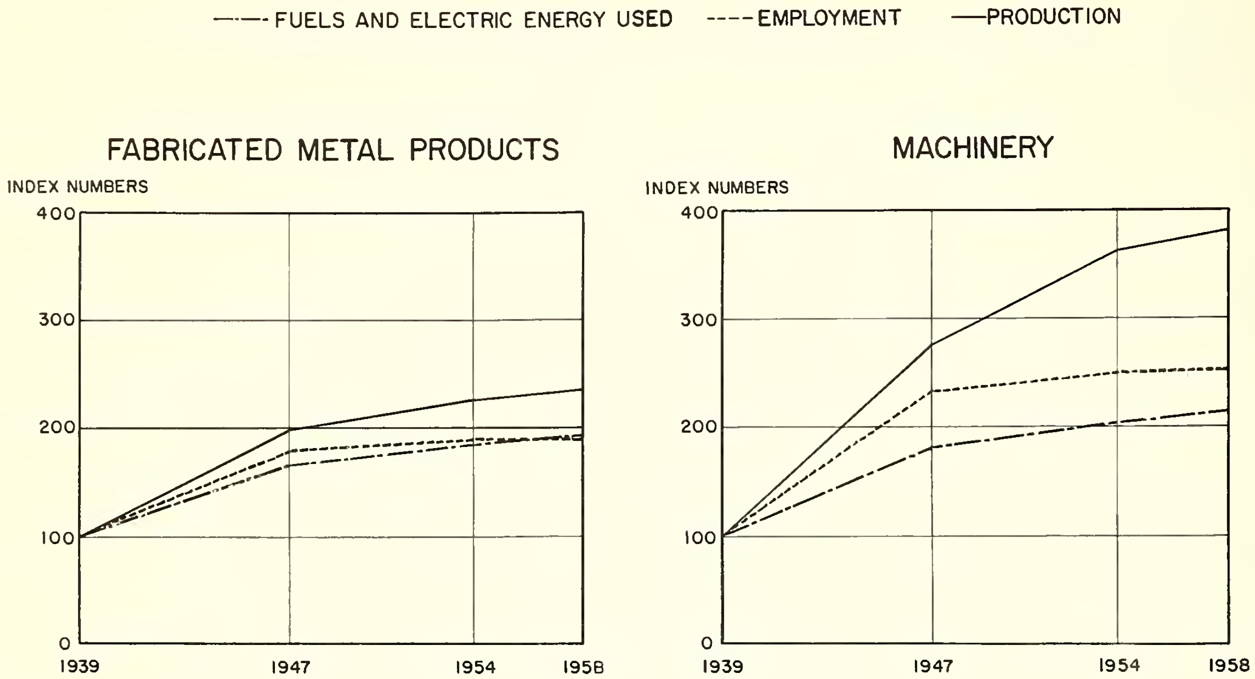




U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

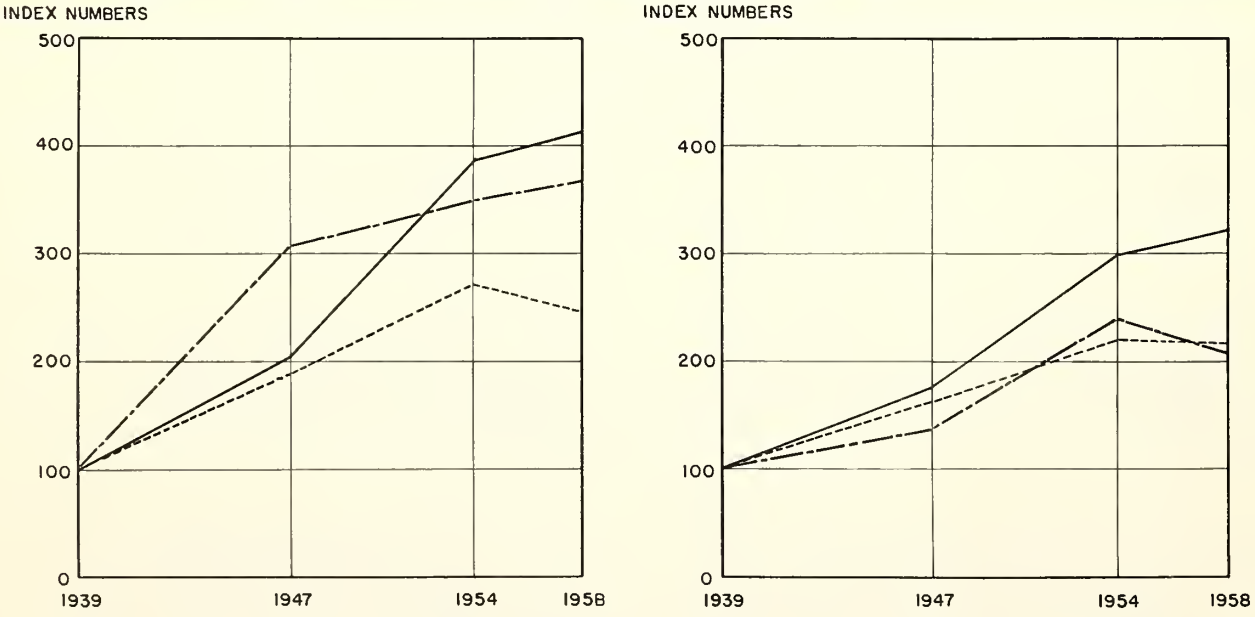
CHART 11.-INDEXES OF FUELS AND ELECTRIC ENERGY USE, EMPLOYMENT, AND PRODUCTION IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1939, 1947, 1954, AND 1958-CONTINUED

(Index numbers: 1939=100)



FABRICATED METAL PRODUCTS

MACHINERY



TRANSPORTATION EQUIPMENT

INSTRUMENTS AND MISCELLANEOUS MANUFACTURING of only 100 percent. For petroleum and coal products, with an energy use increase of 220 percent, production was able to increase by 120 percent while employment went up by only 50 percent. On the other hand, for stone, clay, and glass products, a production increase of 120 percent was accompanied by an energy use increase of only 80 percent; but an increase of 80 percent was required in employment.

FACTORS CONTRIBUTING TO PRODUCTIVITY IN AGRICULTURE

The upsurge in production per person engaged in agriculture in the last two decades, from $1.8 thousand 1954 dollars in 1940 to $4.2 thousand in 1961, was accompanied by a similar increase in investment in farm implements and machinery (see table 18). In 1954 dollars, the inventory of such equipment went up from $5.8 billion in 1940 to $14.7 billion in 1961. The inventory of this equipment, which had only doubled in the three decades from 1910 to 1940, nearly tripled in the two decades from 1940 to 1960. The use of fertilizers increased at approximately the same rate, from an expenditure, in 1954 dollars, of $578 million in 1940 to $1,478 million in 1961. These increases were associated with an average increase in crops production per acre of about 47 percent between 1940 and 1961.

The Economic Research Service of the Department of Agriculture has constructed indexes of farm input by major input groups. On a 1945 base these indexes are:[4]

Input item	Index numbers (1945 = 100)		
	1960	1955	1950
Total input.............	103	103	102
Farm labor................	55	67	80
Farm real estate...........	114	114	111
Mechanical power and machinery................	192	184	160
Fertilizer and lime.........	246	200	151
Feed, seed, and livestock purchases.................	148	119	100
Miscellaneous..............	142	124	111

Thus, increases in use of fertilizer and lime; mechanical equipment; and purchased feed, seed, and livestock, in that order, lead the list of growing input factors.

---

[4] Source: U.S. Department of Agriculture, Agricultural Statistics 1961 (1962), table 663.

Table 18.--Some Factors Relating to Varying Productivity in Agriculture in the United States: Selected Years, 1910-1961

Year	Value of agricultural production[1] (millions of constant 1954 dollars)	Number of persons engaged[2] (1,000)	Production per person engaged[2]		Index of output per man-hour[3] (1940 = 100)			Inventory value of farm implements and machinery[4]		Expenditures for fertilizer and lime[5]		Index of crops production per acre[6] (1940 = 100)
			Constant 1954 dollars	Index (1940 = 100)	Farm total	Crops	Live-stock and products	Millions of constant 1954 dollars	Index (1940 = 100)	Millions of constant 1954 dollars	Index (1940 = 100)	
1961..................	29,193	6,990	4,176	236	313	336	209	14,723	255	1,478	256	147
1960..................	29,728	7,118	4,176	236	307	328	199	15,089	262	1,420	246	143
1959..................	28,219	7,384	3,822	216	291	301	195	15,030	261	1,422	246	134
1958..................	28,206	7,525	3,748	212	281	303	180	14,176	246	1,297	224	138
1957..................	27,242	7,577	3,595	203	251	269	172	14,558	253	1,251	216	122
1956..................	27,653	7,820	3,536	200	236	240	170	14,944	259	1,245	215	121
1955..................	26,899	8,364	3,216	181	222	221	162	15,693	272	1,271	220	120
1954..................	26,087	8,639	3,020	170	209	206	155	15,919	276	1,274	220	116
1953..................	25,819	8,864	2,913	164	196	193	150	15,586	270	1,261	218	117
1952..................	25,226	9,149	2,757	156	188	187	146	15,325	266	1,258	218	118
1951..................	23,645	9,546	2,477	140	170	167	142	13,428	233	1,055	183	112
1950..................	23,383	9,926	2,356	133	167	170	134	12,975	225	1,087	188	105
1945..................	22,949	10,000	2,295	130	125	127	114	10,941	190	995	172	103
1940..................	19,459	10,979	1,772	100	100	100	100	5,763	100	578	100	100
1930..................	17,407	12,497	1,393	79	79	75	95	6,475	112	488	84	84
1920..................	16,066	13,432	1,196	67	73	76	89	4,342	75	345	60	98
1910..................	13,866	13,555	1,023	58	67	67	88	2,674	46	270	47	90

[1] Source: Appendix A, table A1 of this report.

[2] Represents both family workers and hired workers. Source of employment: U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K-73 and comparable series for later years.

[3] Source: U.S. Department of Agriculture, Changes in Farm Production and Efficiency, Statistical Bulletin No. 233 (August 1958) and comparable series for later years.

[4] Based on U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K-158, adjusted to constant 1954 dollars by means of series E-37 and, for years prior to 1939, E-36; and comparable series for later years.

[5] Based on U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K-159, adjusted to constant 1954 dollars by means of series E-32 and, for years prior to 1933, appendix B, table B1 of the present report; and comparable series for later years.

[6] Based on U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K-103.

The rate of expansion in production per man-hour was quite different, of course, for various commodities. For all farm products, between 1940 and 1961, the increase was 213 percent, made up of an increase of 236 percent for crops and 109 percent for livestock and products. For major farm commodity groups, indexes of the increases on a 1945 base are:[5]

Commodity group	Index numbers (1945 = 100)		
	1960	1955	1950
All farm output.........	248	177	133
Crops.....................	261	174	134
Food grains.............	294	174	140
Feed grains.............	395	224	161
Hay and forage..........	228	178	153
Sugar crops.............	295	223	153
Fruits and nuts..........	153	140	119
Vegetables...............	214	162	127
Oil crops................	381	265	200
Cotton....................	316	212	134
Tobacco............... .	182	164	114
Livestock and products......	175	143	118
Milk cows................	183	143	121
Meat animals............	116	113	105
Poultry..................	254	172	117

REGIONAL DIFFERENCES IN PRODUCTIVITY

The varying composition of raw materials production by geographic areas, as well as inherent differences in regional characteristics (climate, water supply, nature of soil or mineral deposits) lead to widely different production per unit of labor input rates by geographic divisions. Table 19 shows a comparison of such available regional measures, each expressed as a percent of the average for the United States. In general, the table indicates a significantly lower productivity of labor in the South for agriculture and mineral industries than in other areas. The most significant exception is the West South Central for mineral industries which reflects the high productivity of labor in oil and gas extraction. Nevertheless, the lowest percent for all mineral industries was in New England, 43 percent of the national average, and the highest in the Pacific States, 222 percent. Labor productivity varied for crops from 56 percent of the national average for the East South Central to 165 percent for the West North Central; and for livestock and products from 76 percent for the East South Central to 140 percent for New England. For forest products, the lowest labor productivity is shown for the North and very much higher ratios for the West. For sawlogs, labor productivity in the North was only 61 percent of the national average as compared with 178 percent for the West.

Table 20 shows, by geographic division, the same factors relating to productivity in the mineral industries as were shown by major industry groups

---

[5] Source: U.S. Department of Agriculture, Agricultural Statistics 1961 (1962), table 668.

Table 19.--Distribution of Output Per Man-Hour or Man-Day for the Raw Materials Industries in the United States, by Geographic Division: Selected Periods

Division	Percent of United States total							
	Farm output per man-hour: average 1943-1945[1]			Forest products production per man-day: 1950[2]				Mineral industries, value added per man-hour: 1954[3]
	Farm total output	Crops	Livestock	Sawlogs	Veneer logs	Pulpwood	Other	
UNITED STATES AVERAGE..........	100	100	100	100	100	100	100	100
NORTH								
New England.........................	136	154	140	61	61	87	84	43
Middle Atlantic.....................	112	118	122					47
East North Central..................	122	149	104					67
West North Central..................	128	165	100					97
SOUTH								
South Atlantic......................	70	63	100	75	69	99	99	47
East South Central..................	58	56	76					54
West South Central..................	70	62	82					158
WEST								
Mountain............................	124	141	89	178	185	135	172	101
Pacific.............................	138	130	116					222

[1] Source: U.S. Department of Agriculture, Reuben W. Hecht and Glen T. Barton, Gains in Productivity of Farm Labor, Technical Bulletin No. 1020 (December 1950).

[2] Source: U.S. Department of Agriculture, Forest Service, Equipment, Supplies, and Manpower Used by Primary Forest Products Industries: 1950 (April 1, 1952).

[3] Source: see table 20.

Table 20.--Some Factors Contributing to Varying Productivity in the Mineral Industries in the United States, by Geographic Divisions: 1939, 1954, and 1958

Division and year	Value added		Number of persons engaged[1]	Man-hours of production workers[2]	Value added per--				Energy used per production worker[2]		Horsepower of power equipment per production worker[2]		Water intake		Capital expenditures	
					Person engaged[1]		Man-hour of production workers[2]									
	Millions of current dollars	Percent of U.S. average	(1,000)	(millions)	Thousands of current dollars	Percent of U.S. average	Current dollars	Percent of U.S. average	1,000 kwh equivalent	Percent of U.S. average	Horsepower	Percent of U.S. average	Billion gallons	Percent of U.S.	Millions of current dollars	Percent of U.S.
United States..........1958...	13,381	100.0	769	1,078	17.4	100	12.4	100	718	100	(NA)	100	(NA)	100.0	2,798	100.0
1954...	[3]11,546	100.0	826	1,249	14.0	100	9.2	100	576	100	63	100	722	100.0	2,724	100.0
1939[4]..	2,680	100.0	872	1,288	3.1	100	2.1	100	291	100	18	100	(NA)	100.0	(NA)	100.0
New England..................1958...	32	0.2	4	6	8.0	46	5.3	43	259	36	(NA)	(NA)	(NA)	(NA)	4	0.1
1954...	[3]32	0.3	4	8	8.0	57	4.0	43	157	27	74	118	8	1.1	4	0.1
1939[4]..	14	0.5	5	9	2.8	94	1.6	75	95	33	33	180	(NA)	(NA)	(NA)	(NA)
Middle Atlantic..............1958...	733	5.5	87	124	8.4	48	5.9	48	205	29	(NA)	(NA)	(NA)	(NA)	93	3.3
1954...	[3]767	6.6	121	177	6.3	45	4.3	47	184	32	48	76	94	13.1	76	2.8
1939[4]..	428	16.0	219	318	2.0	65	1.3	61	148	51	14	77	(NA)	(NA)	(NA)	(NA)
East North Central...........1958...	936	7.0	75	114	12.5	72	8.2	66	298	42	(NA)	(NA)	(NA)	(NA)	127	4.5
1954...	[3]813	7.0	81	132	10.0	72	6.2	67	236	41	62	99	116	16.1	158	5.8
1939[4]..	300	11.2	108	161	2.8	90	1.9	90	184	63	20	109	(NA)	(NA)	(NA)	(NA)
West North Central...........1958...	919	6.9	51	76	18.0	103	12.1	97	613	85	(NA)	(NA)	(NA)	(NA)	145	5.2
1954...	[3]786	6.8	52	87	15.1	108	9.0	97	434	75	85	135	55	7.6	199	7.3
1939[4]..	214	8.0	45	70	4.8	155	3.1	144	185	64	28	153	(NA)	(NA)	(NA)	(NA)
South Atlantic...............1958...	940	7.0	106	162	8.9	51	5.8	47	159	22	(NA)	(NA)	(NA)	(NA)	142	5.1
1954...	[3]761	6.6	109	176	7.0	50	4.3	47	131	23	33	52	120	16.6	99	3.6
1939[4]..	243	9.1	142	211	1.7	55	1.2	56	66	23	10	55	(NA)	(NA)	(NA)	(NA)
East South Central...........1958...	651	4.9	62	93	10.5	60	7.0	56	223	31	(NA)	(NA)	(NA)	(NA)	100	3.6
1954...	[3]520	4.5	67	104	7.8	56	5.0	54	163	28	33	52	40	5.5	69	2.5
1939[4]..	131	4.9	94	134	1.4	45	1.0	47	64	22	8	44	(NA)	(NA)	(NA)	(NA)
West South Central...........1958...	6,159	46.0	226	320	27.3	157	19.2	155	1,563	218	(NA)	(NA)	(NA)	(NA)	1,535	54.8
1954...	[3]5,210	45.1	224	358	23.3	167	14.6	158	1,315	228	84	134	148	20.5	1,526	56.0
1939[4]..	746	27.8	123	176	6.1	197	4.2	200	1,078	371	33	180	(NA)	(NA)	(NA)	(NA)
Mountain.....................1958...	1,746	13.0	85	129	20.5	118	13.5	109	718	100	(NA)	(NA)	(NA)	(NA)	481	17.2
1954...	[3]1,305	11.3	85	140	15.4	110	9.3	101	558	97	69	110	92	12.7	365	13.4
1939[4]..	284	10.6	74	130	3.8	123	2.2	102	282	97	22	120	(NA)	(NA)	(NA)	(NA)
Pacific......................1958...	1,265	9.5	37	53	34.2	197	23.9	193	1,424	198	(NA)	(NA)	(NA)	(NA)	172	6.1
1954...	[3]1,350	11.7	44	66	30.7	220	20.5	222	1,179	205	113	180	49	6.8	228	8.4
1939[4]..	320	11.9	46	79	7.0	226	4.1	195	758	261	38	208	(NA)	(NA)	(NA)	(NA)

Source: Census of Mineral Industries reports.

[1] The figures by geographic division represent number of employees only. The United States totals include 37 thousand proprietors and firm members in 1958, 40 thousand such persons in 1954, and 16 thousand such persons in 1939.

[2] "Production worker" figures include production, development, and exploration workers.

[3] Excludes data for the Uranium-Radium-Vanadium Ores Industry, amounting, for the United States as a whole, to between $20 and $40 million.

[4] Includes data for mining operations in manufacturing establishments. In 1954, the following statistics were reported for such operations: value added, $195 million; persons engaged, 20 thousand; man-hours, 40 thousand.

in table 17. Many of the varying factors by region reflect the relative productivity by industry indicated in the earlier totals. Thus, value added per man-hour and energy use per production worker were highest for the West South Central and Pacific States where oil and gas extraction constitute the major portion of mineral operations. In 1958, oil and gas extraction accounted for 96 percent of the value added at mineral operations in the West South Central States and 81 percent in the Pacific States.

Increases in output per man-hour differed considerably by geographic areas. Such increases between 1954 and 1958 are shown in the following table for farm and for mineral products:

Division	1958 index numbers (1954 = 100)	
	Farm output per man-hour[1]	Minerals output per man-hour[2]
United States....	134	126
New England........	120	124
Middle Atlantic......		128
East North Central ..	122	124
West North Central. .	144	126
South Atlantic.......	132	126
East South Central...	147	131
West South Central ..	137	123
Mountain...........	128	136
Pacific.............	115	109

[1] Based on U.S. Department of Agriculture, Agricultural Statistics 1961 (1962), table 669. "Northeast" has been used to represent new England and Middle Atlantic; "Lake States" for East North Central, an average of "Corn Belt" and "Northern Plains" to represent West North Central, "Appalachian" to represent "South Atlantic," "Southeast" to represent East South Central, and an average of "Delta States" and "Southern Plains" to represent West South Central.

[2] Based on table 20, Value added per man-hour deflated to 1954 dollars by use of the price index for all minerals in appendix B, table B-1 of this report.

Increases in farm output per man-hour between 1954 and 1958 which averaged 34 percent, ranged from 15 percent for the Pacific to 56 percent for the Northern Plains. For minerals, the 1954-1958 increase in output per man-hour averaged 26 percent, ranging from 9 percent for the Pacific to 36 percent for the Mountain States.

AN INDEX OF PRODUCTIVITY OF LABOR AND CAPITAL

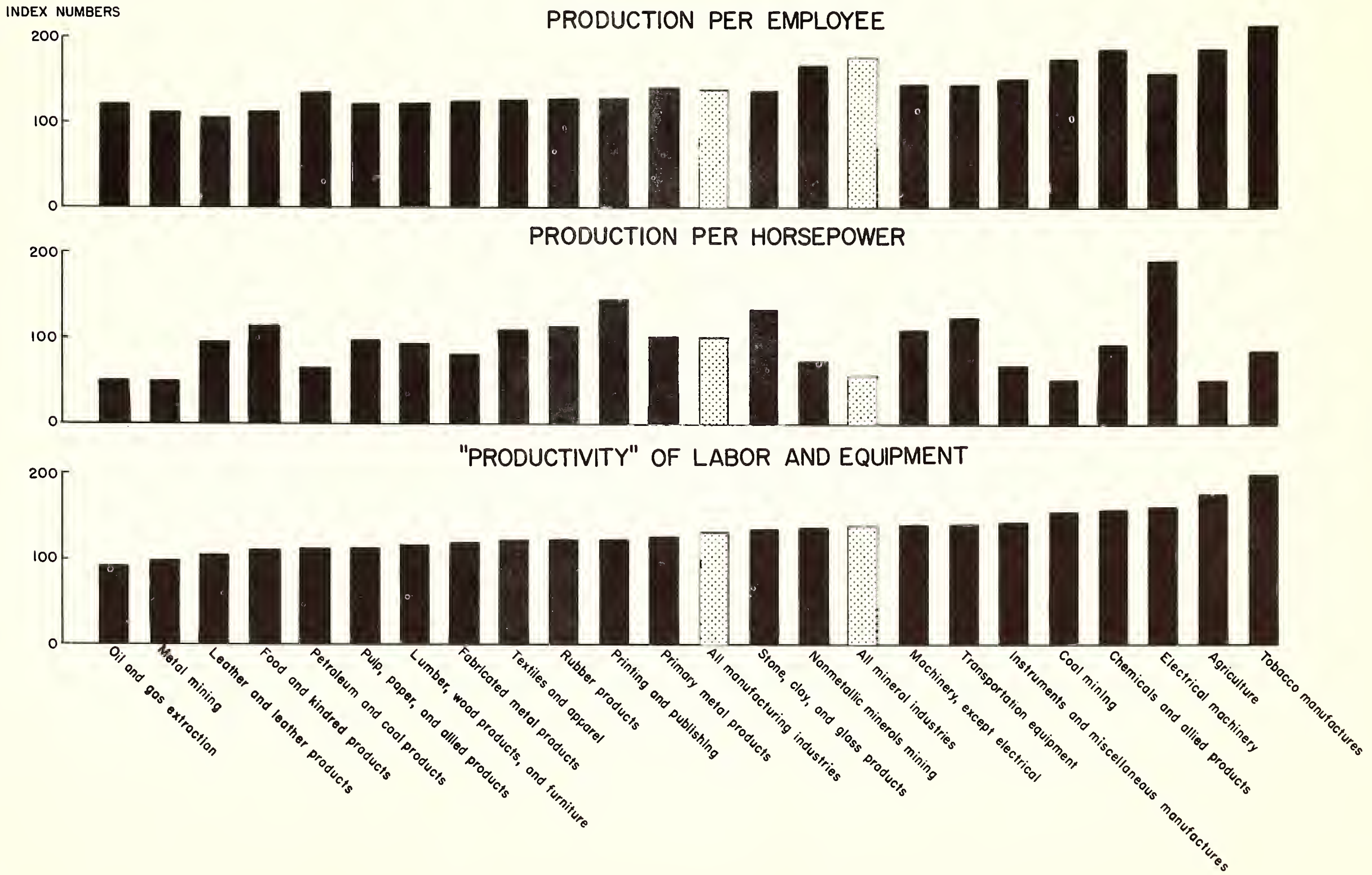
In order to provide a composite measure of the productivity of labor and capital, production per employee and production per horsepower relatives were combined with payroll weights for the former and cost of fuels and purchased electric energy plus current capital expenditures weights for the latter.

Industry groups were ranked according to their increases in "productivity," measured in this way, between 1939 and 1954. In chart 12, these "productivity" measures are compared with their components, production per employee and production per horsepower. For all mineral industries, the increase of 27 percent more than for all manufactures in production per employee is accompanied by a 44 percent decline in production per horsepower for mining and a 3 percent increase in this factor for manufacturing. This yielded a "productivity" increase for the mineral industries of only 6 percent more than for manufactures.

The high equipment requirements for increasing production per employee in certain mineral industries are reflected in oil and gas extraction and metal mining appearing at the bottom of the ladder for aggregate "productivity." By contrast, coal mining and agriculture, which use relatively much less equipment, are near the ladder top. In all four of these industry groups, production per horsepower declined by about 50 percent between 1939 and 1954, while production per employee increased. By contrast, for the food and kindred products and the electrical machinery industries, production per horsepower increased more rapidly than production per employee. Nevertheless, for all of the 6 industry groups showing the highest increase in production per employee, there was a decline in production per horsepower--for four of them by more than 28 percent; and five of these six industry groups were among the top six in "productivity" increase.

CHART 12-INDEXES OF PRODUCTION PER EMPLOYEE, PRODUCTION PER HORSEPOWER, AND "PRODUCTIVITY" IN THE UNITED STATES, BY MAJOR INDUSTRY GROUPS: 1939 & 1954

(Index numbers: 1939=100)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Chapter 9.--TRENDS IN AGRICULTURAL PRODUCTS

Although the domestic production of crops has doubled and the production of livestock has increased by 157 percent since the beginning of the century, the products of agriculture have declined from 68 percent of all raw materials production in 1900-1904 to 61 percent in 1960-1961 (see chapter 3). Per capita consumption of agricultural products has increased by 9 percent during the same period, but the proportion of agricultural products among all raw materials consumed has declined from 66 percent to 58 percent. Agricultural products are used primarily for foods, amounting to 86 percent of the total at the beginning of the century and also at the beginning of the seventh decade, although to a slightly lower percentage in some intervening periods. The declining share of agriculture in raw materials consumption reflects primarily the decline in foods from 60 percent of all raw materials to about 51 percent, as our increasing standard of living permits the satisfaction of a larger variety of human needs.

Agricultural exports at the beginning of the century amounted to about one-fifth of production, and in the early 1960's to nearly one-sixth, but in portions of the intervening period dropped to less than one-tenth. Meanwhile, imports, which had amounted to only 61 percent of exports in 1900-1904, began to exceed exports in the 1920-1924 period and by 1935-1939 were more than twice as large as exports. This margin has declined considerably in recent years. For many of the largest commodity groups, the dollar volume of consumption was not very different from that of production (see chart 13). However, imported materials include many items rarely produced in the United States, whereas domestic production of some agricultural materials continues to be substantially in excess of consumption, and even in excess of consumption plus net exports.

CROPS PRODUCTION AND CONSUMPTION

Domestic production of crops declined from 46 percent of all agricultural products in 1900-1904 to about 42 percent in recent years (see table 21). This was accounted for primarily by a decline from 11 to 8 percent of all agricultural products for vegetables, including potatoes and miscellaneous food crops, and a decline from 13 to 8 percent for cotton. Meanwhile, oil crops increased from 0.7 to 4 percent and feed grains (for human food and export) and sugar crops from 3.6 to 5.1 percent. Food grains represented about the same proportion at the beginning and end of the period, 8 percent; likewise, fruits, 5 percent; and tobacco, 4 percent.

The pattern of domestic consumption of crops was somewhat different. While total consumption of crops declined over the six decades from 45 to 41 percent of all agricultural products, the consumption of food grains also declined, from 5.1 to 3.2 percent; feed grains (for human food and export) and sugar crops from 4.7 to 3.0 percent; potatoes and dried beans and peas, from 2.9 to 1.9 percent; and fresh vegetables and miscellaneous food crops from 7.2 to 5.7 percent. The only crop groups used for food which showed an increase in this percentage were oil crops, from 1.2 to 2.3 percent, and coffee, tea, cocoa, and spices, from 8.6 to 9.4 percent. The total consumption of crops used for food declined from 36 percent of all agricultural products in 1900-1904 to 31 percent in 1960-1961.

Meanwhile, there was a slight increase in the proportion of agricultural products represented by crops used for nonfood purposes, from 9.6 percent of the total in 1900-1904 to 12.2 percent in 1950-1954 and to 10.3 percent in 1960-1961. This was partly accounted for by an increase for cotton from 3.7 percent to 5.2 and 4.4 percent, respectively, in the two later periods.

The changes in percentage distribution of crop production and consumption should not obscure the substantial increases in production and consumption for all major groups of agricultural materials (see table 22). For example, the production of food grains increased between 1900-1904 and 1960-1961 by 175 percent, and domestic consumption by 50 percent; production of fruits and tree nuts increased by 110 percent, and consumption by 130 percent; production of vegetables, including potatoes, by 59 percent, and consumption by 89 percent; production of oil crops by 1,230 percent, and consumption by 187 percent; and production of cotton by 44 percent, and consumption by 200 percent.

All of the statistics for crops referred to above exclude the very large segment of crops produced and used domestically for feed and seed (see appendix A), since such products duplicate the figures for livestock and other agricultural products produced from them. In the period 1960-1961, the aggregate value, in 1954 dollars, of crops for feed and seed amounted to 47 percent of the combined value of crops production for all purposes.[1] The production of crops for feed and seed increased between 1925-1929 and 1960-1961 by 21 percent. In 1960-1961, crops for such purposes were made up of feed crops, 58 percent; hay, silage, and forage, 28 percent; and other crops, 14 percent.

---

[1] See appendix A, tables A1 and A13.

Table 21.--Percent Distribution of Agricultural Production and Consumption in the United States by Commodity Groups, for Selected Periods: 1900-1961

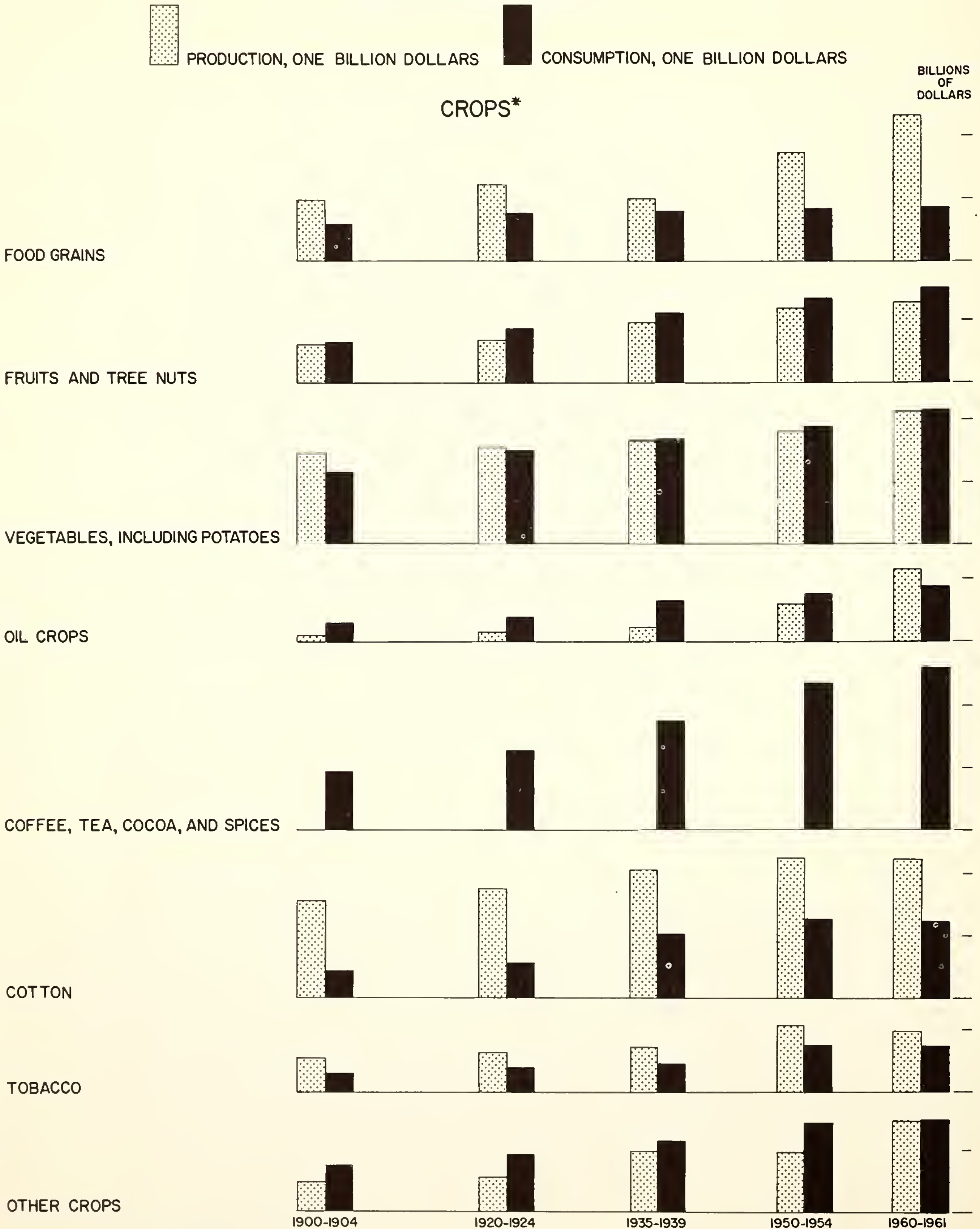
Commodity group	Production					Consumption				
	1960-1961	1950-1954	1935-1939	1920-1924	1900-1904	1960-1961	1950-1954	1935-1939	1920-1924	1900-1904
All agricultural materials	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Crops, total	41.5	41.2	43.9	42.2	45.8	41.2	43.0	45.9	43.1	45.3
Foods, total	(NA)	(NA)	(NA)	(NA)	(NA)	30.9	30.8	34.2	34.1	35.7
Food grains	8.4	7.5	5.8	8.1	8.0	3.2	3.4	4.3	4.9	5.1
Feed grains and sugar crops	[1]5.1	[1]3.9	[1]5.4	[1]3.5	[1]3.6	3.0	3.0	3.5	4.5	4.7
Fruits and tree nuts:										
Domestic fruits and tree nuts	4.5	5.1	5.5	4.6	5.0	4.4	4.6	4.8	4.6	4.9
Bananas	...	...	...	...	...	1.0	0.9	1.2	1.0	1.1
Potatoes, sweet potatoes, dried beans and peas	7.6	7.7	9.6	9.4	11.0	1.9	2.0	2.4	2.8	2.9
Fresh vegetables and miscellaneous food crops						5.7	5.5	6.5	6.9	7.2
Oil crops	[2]4.0	[2]2.5	[2]1.1	[2]0.7	[2]0.7	2.3	1.9	2.1	1.2	1.2
Coffee, tea, cocoa, and spices	...	...	...	...	...	9.4	9.5	9.4	8.2	8.6
Nonfoods, total	(NA)	(NA)	(NA)	(NA)	(NA)	10.3	12.2	11.7	9.0	9.6
Cotton	8.1	9.6	12.0	11.5	12.9	4.4	5.2	5.1	3.5	3.7
Nonfood oil crops	(2)	(2)	(2)	(2)	(2)	0.8	1.1	1.4	1.4	1.5
Tobacco	3.5	4.6	4.2	4.2	4.4	2.8	3.1	2.5	2.6	2.7
Feed grains and other nonfood domestic crops	[1]0.3	[1]0.3	[1]0.3	[1]0.2	[1]0.2	1.5	1.6	1.4	0.4	0.4
Rubber	...	...	...	...	...	0.4	0.8	0.7	0.5	0.7
Other imported nonfood crops	...	...	...	...	...	0.4	0.4	0.5	0.6	0.6
Livestock, total	58.5	58.8	56.1	57.8	54.2	58.8	57.0	54.1	56.9	54.7
Foods, total	(NA)	(NA)	(NA)	(NA)	(NA)	55.4	53.1	49.3	52.2	50.1
Dairy products and honey	[3]13.5	[3]14.7	[3]15.4	[3]13.9	[3]12.6	12.2	13.4	14.1	13.4	12.8
Meat animals	[3]31.7	[3]30.9	[3]29.6	[3]33.5	[3]32.7	30.2	27.4	25.7	29.1	27.9
Poultry and eggs	[3]12.8	[3]12.7	[3]10.0	[3]9.6	[3]8.1	13.0	12.3	9.5	9.7	9.4
Nonfoods, total	(NA)	(NA)	(NA)	(NA)	(NA)	3.4	3.9	4.8	4.7	4.6
Mohair and shorn wool	0.5	0.5	1.1	0.8	0.8	1.7	1.9	1.8	1.8	1.7
Silk	...	...	...	...	...	0.1	0.1	0.8	0.8	0.7
Other livestock products for nonfood use	(3)	(3)	(3)	(3)	(3)	1.6	1.9	2.2	2.2	2.2

Source: Based on table 22.

NA Not available.
[1] Figures for production of feed grains for nonfood use are included with those for production of feed grains for food.
[2] Figures for production of oil crops for nonfood use are included with those for production of oil crops for food.
[3] Figures for livestock products for nonfood use are included with those for livestock products for food.

CHART 13.-PRODUCTION AND CONSUMPTION OF AGRICULTURAL MATERIALS IN THE UNITED STATES, BY DETAILED GROUPS FOR SELECTED PERIODS: 1900-1961

(Annual averages in constant 1954 dollars)

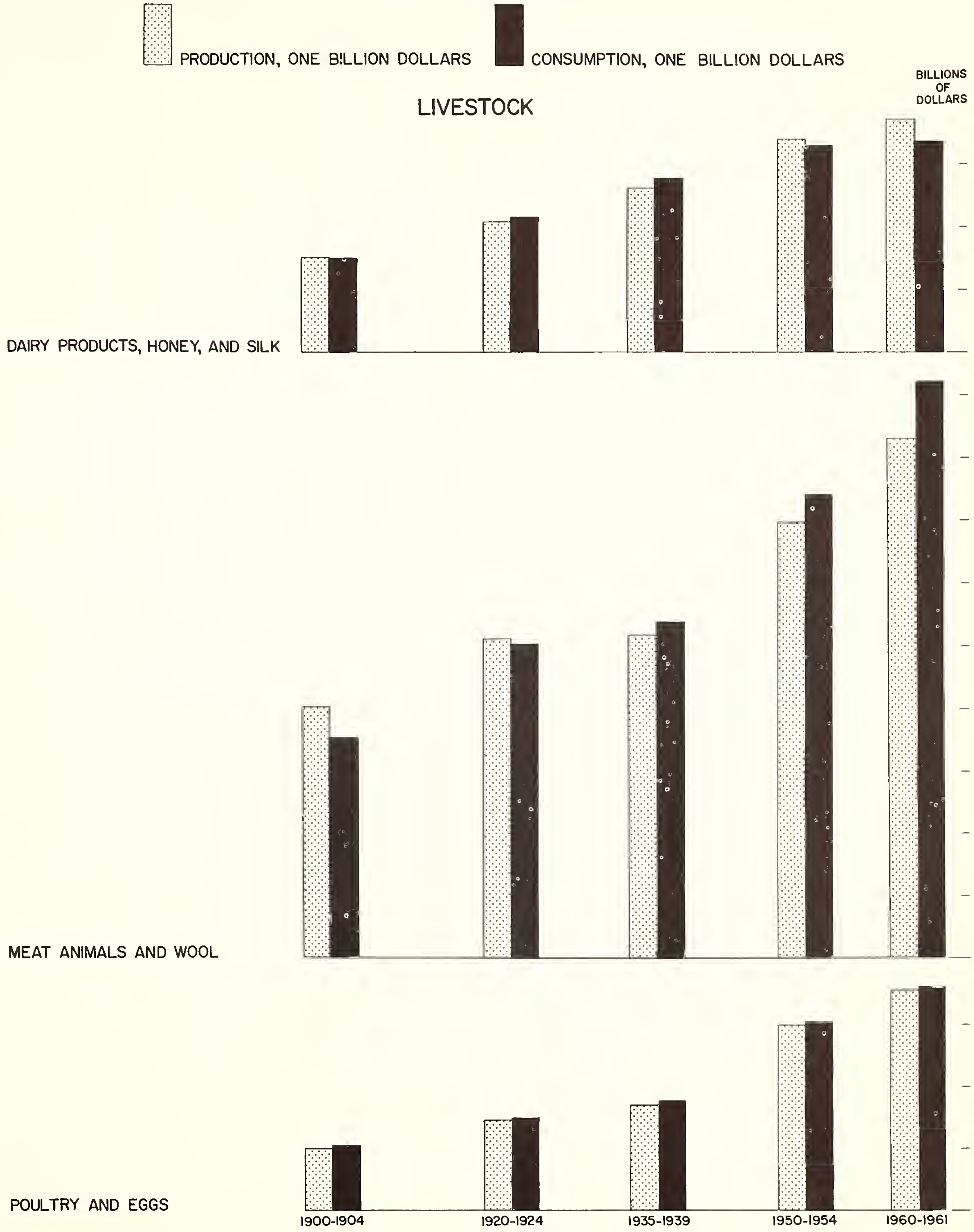


*Excludes crops for feed and seed.

U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

CHART 13: PRODUCTION AND CONSUMPTION OF AGRICULTURAL MATERIALS IN THE UNITED STATES, BY DETAILED GROUPS FOR SELECTED PERIODS: 1900-1961-CONTINUED

(Annual averages in constant 1954 dollars)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Table 22.--Average Annual Agricultural Production and Consumption in the United States by Commodity Groups, for Selected Periods: 1900-1961

(Measured in millions of constant 1954 dollars)

Commodity group	Production					Consumption				
	1960-1961	1950-1954	1935-1939	1920-1924	1900-1904	1960-1961	1950-1954	1935-1939	1920-1924	1900-1904
All agricultural materials	29,460	24,832	18,051	15,990	12,840	29,544	26,228	19,750	16,241	11,808
Crops, total	12,236	10,223	7,929	6,751	5,877	12,167	11,271	9,065	6,998	5,344
Foods, total	(NA)	(NA)	(NA)	(NA)	(NA)	9,140	8,085	6,759	5,546	4,219
Food grains	2,835	1,873	1,048	1,299	1,032	913	881	852	800	608
Feed grains and sugar crops	[1]1,490	[1]959	[1]979	[1]559	[1]462	897	789	687	730	556
Fruits and tree nuts:										
Domestic fruits and tree nuts	1,336	1,264	992	732	636	1,299	1,216	948	753	573
Bananas	...	...	...	...	...	304	228	230	163	124
Potatoes, sweet potatoes, dried beans and peas	2,248	1,917	1,729	1,509	1,411	561	527	482	450	343
Fresh vegetables and miscellaneous food crops						1,706	1,462	1,294	1,124	854
Oil crops	[2]1,184	[2]617	[2]204	[2]114	[2]89	671	493	414	190	145
Coffee, tea, cocoa, and spices	...	...	...	...	...	2,789	2,489	1,852	1,336	1,016
Nonfoods, total	(NA)	(NA)	(NA)	(NA)	(NA)	3,026	3,186	2,306	1,452	1,125
Cotton	2,393	2,393	2,169	1,841	1,659	1,306	1,352	1,008	572	436
Nonfood oil crops	(2)	(2)	(2)	(2)	(2)	246	287	285	230	175
Tobacco	1,039	1,133	757	673	567	797	807	497	415	315
Feed grains and other nonfood domestic crops	[1]66	[1]67	[1]52	[1]24	[1]21	454	424	266	63	49
Rubber	...	...	...	...	...	114	203	145	82	82
Other imported nonfood crops	...	...	...	...	...	109	113	105	90	68
Livestock, total	17,224	14,609	10,122	9,239	6,963	17,377	14,957	10,685	9,243	6,464
Foods, total	(NA)	(NA)	(NA)	(NA)	(NA)	16,371	13,934	9,736	8,478	5,914
Dairy products and honey	3,985	3,640	2,787	2,219	1,620	3,593	3,516	2,791	2,174	1,517
Meat animals	[3]9,316	[3]7,675	[3]5,339	[3]5,362	[3]4,201	8,947	7,196	5,080	4,731	3,300
Poultry and eggs	[3]3,783	[3]3,164	[3]1,795	[3]1,536	[3]1,042	3,831	3,222	1,865	1,573	1,097
Nonfoods, total	(NA)	(NA)	(NA)	(NA)	(NA)	1,006	1,023	949	765	550
Mohair and shorn wool	156	130	201	122	100	509	504	355	287	200
Silk	...	...	...	...	...	16	17	156	125	87
Other livestock products for nonfood use	(3)	(3)	(3)	(3)	(3)	481	502	438	353	263

Source: From detailed worksheets for tables A1, A4, and A5, appendix A of this report.

NA Not available.

[1] Figures for production of feed grains for nonfood use are included with those for production of feed grains for food.

[2] Figures for production of oil crops for nonfood use are included with those for production of oil crops for food.

[3] Figures for livestock products for nonfood use are included with those for livestock products for food.

LIVESTOCK PRODUCTION AND CONSUMPTION

Livestock production increased from 54 to about 58 percent of all agricultural products over the last 60 years. There was a corresponding increase in domestic consumption of these products from 55 to 59 percent of all agricultural products. The major portions of these increases were accounted for by increases for poultry and eggs, which went up for production from 8 to 13 percent of all agricultural products, and for consumption, from 9 to 13 percent. The other large livestock groups are meat animals, accounting for 32.7 percent of production in 1900-1904 and 31.7 percent in 1960-1961; and dairy products and honey, accounting for 12.6 and 13.5 percent, respectively, for the same periods. Consumption percentages for these items were not very different from those for production, for 1900-1904 representing 27.9 for meat animals and 12.8 for dairy products and honey, and for 1960-1961, 30.2 and 12.2, respectively.

Increases in production for the major livestock groups between 1900-1904 and 1960-1961 were, for dairy products and honey, 146 percent; for meat animals, 122 percent; and for poultry and eggs, 263 percent. The corresponding consumption increases were 137 percent; 171 percent; and 249 percent, respectively. Only the consumption of silk declined--by 82 percent from the beginning of the century, and by 90 percent from 1935-1939.

AGRICULTURAL IMPORTS AND EXPORTS

Gross imports of agricultural products have increased progressively throughout the present century, whereas gross exports remained more or less constant during much of the period, but dropped during the great depression and doubled in the last decade. Gross exports and imports differed by only 10 percent in the 1920-1924 and 1960-1961 periods, but in 1900-1904 net exports amounted to more than one-third of gross exports, and in 1935-1939 and 1950-1954 net imports were in the neighborhood of one-half of gross imports.

Gross exports and imports of crops have, in most periods, accounted for over 80 percent of the export and import totals for all agricultural products. More than half of the imports are accounted for by items not usually produced in the United States, such as coffee, tea, cocoa, bananas, rubber, and silk. The major export items are food grains, cotton, tobacco, animal products, and in recent years, oil crops. Exports of cotton amounted to one-half of gross exports of agricultural products in the 1900-1904 period, and to nearly three-fourths of the domestic cotton crop. The relative importance of cotton exports declined to less than one-fifth of gross exports of agricultural products in recent years, and to less than one-half of the domestic cotton crop. Since World War II, food grains have accounted for more than one-third of United States exports, and to more than one-half of the food grain crop (see tables 22 and 23).

Table 23.--Average Annual Imports and Exports of Agricultural Products for the United States, for Selected Periods: 1900-1961

(Measured in millions of constant 1954 dollars)

Commodity group and item	1960-1961	1950-1954	1935-1939	1920-1924	1900-1904
ALL AGRICULTURAL MATERIALS					
Gross imports	5,584	4,798	4,051	3,112	1,646
Gross exports	5,000	2,784	1,600	2,792	2,678
Net imports	584	2,014	2,451	320	-1,032
CROPS					
Gross imports	4,730	4,161	3,511	2,555	1,423
Gross exports	4,386	2,370	1,481	2,239	1,956
Net imports	344	1,791	2,030	316	-533
Food grains	-1,653	-1,230	-269	-491	-424
Fruits and tree nuts	271	180	176	185	61
Vegetables, including potatoes and miscellaneous food crops	15	59	37	196	-214
Oil crops	-349	131	461	291	231
Coffee, tea, cocoa, and spices	2,789	2,489	1,852	1,336	1,016
Cotton	-875	-1,117	-1,327	-1,327	-1,223
Tobacco	-258	-413	-325	-255	-252
Rubber	114	203	145	82	82
Feed grains, sugar crops, and other crops	290	1,489	1,280	299	190
LIVESTOCK					
Gross imports	854	637	540	557	223
Gross exports	614	414	119	553	722
Net imports	240	223	421	4	-499
Dairy products and honey	-372	-139	4	-45	-103
Meat animals	207	-118	33	-279	-638
Poultry and eggs	31	72	68	38	55
Mohair and shorn wool	358	391	160	165	100
Silk	16	17	156	125	87

Source: From detailed worksheets for tables A2 and A3, appendix A of this report.

Note: A minus sign (-) indicates a net export.

CHANGING FARM CHARACTERISTICS

The increase of nearly 130 percent in agricultural production since the beginning of the century has been accomplished, as noted in previous chapters, by a relative and, after 1947, absolute decline in farm employment. This change has been associated with a significant increase in the size of farms operated, in the proportion of hired workers, in the average annual income of farm workers, and in the yield of farm products per acre.

The number of farms in the United States reached a maximum about 1920, when there were 6.4 million farms and had declined to 3.7 million in 1959 (see table 24). Nevertheless, the total land in farms increased until about 1950, when nearly 1.2 billion acres were devoted to farms. The average size of farm, which was 139 acres in 1910, had reached 303 acres in 1959.

During the present century, between 4 and 10 percent of all farms have had less than 10 acres, but these accounted for 0.3 percent or less of all land in farms. Between 39 and 55 percent of all farms have had 10-99 acres, but these also have accounted for only 6 to 18 percent of all land in farms. Between 39 and 50 percent of all farms have had 100-999 acres, accounting for 43 to 63 percent of the land in farms. Finally, 0.8 to 3.7 percent of all farms have contained 1,000 acres or over, and these have accounted for 19 to 49 percent of all farm acreage. The latter group was at a minimum of acreage accounted for in 1910, with 19 percent. This acreage increased to 28 percent by 1930, to over 40 percent by 1945, and to over 49 percent by 1959. Between 1910 and 1959 the percentage of land in farms with 100-999 acres decreased from 63 percent to 44 percent, and the percentage for farms with 10-99 acres decreased from 18 to 6 percent.

The increasing size of farms was associated in the later years with a moderate decline in the proportion of farm labor provided by family workers and an increase in the use of hired workers. These hired workers accounted for 21 percent of farm employment in 1945 and for 26 percent in 1959. However, hired workers had amounted to 25 percent of total farm employment in 1910 and this proportion had slowly declined thereafter to about 1945. Meanwhile, the realized net income to persons on farms from farming, in 1954 dollars, had increased from about $900 in 1910 and 1920 to about $1,700 in 1959.[2]

Farm land is used for a variety of purposes, and this distribution has varied considerably:[3]

Use	Percent of total land in farms		
	1959	1940	1910
Cropland used for crops	32.0	34.2	36.9
Cropland idle or in cover crops	2.9	3.4	2.6
Grassland pasture	47.3	43.4	32.3
Forest and woodland:			
Pastured	8.2	9.4	11.1
Not pastured	6.3	5.4	10.6
Farmsteads, roads, and other land	3.2	4.1	6.5

With the relative increase in livestock products in total agricultural production (see table 21), the percent of land pastured increased from 43 percent in 1900 and 1910 to 56 percent in 1959.

The increasing quality and adaptability of seed and breeding stock, the increasing use of lime and fertilizers, and more efficient farming methods, were associated with a significant increase in production per acre in recent years. In terms of 1954 dollars, production per acre of land in farms increased from $15 in 1900, $18 in 1930, and $20 in 1950, to $25 in 1959. A similar increase was shown for crops production per acre of cropland, from approximately $38 in 1930 and $47 in 1950 to $60 in 1959.[4] Livestock production per acre of pastureland did not increase as much, from approximately $19 in 1900, $21 in 1930, and $23 in 1950 to approximately $27 in 1959. Statistics showing increasing yields per acre and declining man-hour requirements are available for selected crops:[5]

Item	1950	1940	1920	1900
Yield per acre:				
Wheat.......Bushels	16.6	15.9	13.8	13.9
Corn.......do	39.0	30.3	28.4	25.9
Cotton ... Pounds of lint	283	245	160	191
Man-hours per acre:				
Wheat	4.6	7.5	12.0	15
Corn	15.2	25	32	38
Cotton	74	98	90	112
Man-hours per production unit:				
Wheat (per 100 bushels)	28	47	87	108
Corn (per 100 bushels)	39	83	113	147
Cotton (per bale)	126	191	269	280

---

[2] Based on statistics developed by the Agricultural Marketing Service as published in U.S. Bureau of the Census, Statistical Abstract of the United States: 1962 (1962) and U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K128 deflated by series K133, divided by the employment series in table 24.

[3] For source, see table 24.

[4] These ratios are based on crops used for all purposes, including feed and seed.

[5] Source: U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K83, 86, 87, 88, 91, 92, 93, 96, and 97.

Table 24.--Size of Farms, Use of Farmland, Production Per Acre, and Number of Farm Family and Hired Workers in the United States (Excluding Alaska and Hawaii): Selected Years 1900-1959

Item	1959	1954	1950	1945	1940	1930	1920	1910	1900
Number of farms[1].................1,000...	3,704	4,782	5,382	5,859	6,097	6,289	6,448	6,362	5,737
Land in farms[1]..........Million acres...	1,120	1,158	1,159	1,142	1,061	987	956	879	839
Average size of farms...........Acres...	302	242	215	195	174	157	148	138	146
Percent distribution of number of farms:[2]									
Under 10 acres.........................	6.6	10.1	9.0	10.2	8.3	5.7	4.5	5.2	4.7
10-99 acres............................	39.6	43.4	46.9	48.0	50.4	53.7	54.1	52.8	52.9
100-999 acres..........................	50.1	43.7	41.8	39.9	39.7	39.3	40.4	41.2	41.6
1,000 acres and over...................	3.7	2.8	2.3	1.9	1.6	1.3	1.0	0.8	0.8
Percent distribution of land in farms:[2]									
Under 10 acres.........................	0.1	0.2	0.2	0.2	0.3	0.2	0.2	17.9	0.2
10-99 acres............................	6.2	8.2	9.9	11.2	13.3	15.5	16.8		17.4
100-999 acres..........................	44.5	45.7	47.3	48.3	52.1	56.3	59.9	63.1	58.8
1,000 acres and over...................	49.2	45.9	42.6	40.3	34.3	28.0	23.1	19.0	23.6
Land in farms, by use:[1]									
Cropland used for crops...............Million acres...	358	380	387	379	363	379	374	324	319
Cropland idle or in cover crops........................do......	33	19	22	24	36	34	28	23	
Grassland pasture.............do......	530	526	485	529	461	379	328	284	276
Forest and woodland:									
Pastured....................do......	92	121	135	95	100	85	77	98	87
Not pastured................do......	71	76	85	71	57	65	91	93	103
Farmsteads, roads, and other land.........................do......	36	36	45	44	44	45	58	57	54
Grazing land not in farms[1].......do......	326	353	400	428	504	578	661	739	768
Agricultural production per acre of land in farms[3]...1954 dollars...	25.2	22.5	20.2	20.1	18.3	17.6	16.8	15.8	14.9
Crops production per acre of cropland used[3]...............do......	59.6	50.4	47.2	46.6	43.4	37.9	(NA)	(NA)	(NA)
Livestock production per acre of--[3]									
Pastured glassland and woodland in farms................do......	26.8	23.8	22.6	23.3	20.4	21.5	21.3	20.3	18.7
All pastured land and grazing land.................do......	18.6	15.4	13.7	13.8	10.8	9.6	8.1	6.9	6.0
Farm employment, total[4]..1,000 persons...	7,384	8,639	9,926	10,000	10,979	12,497	13,432	13,555	(NA)
Family workers................do......	5,459	6,579	7,597	7,881	8,300	9,307	10,041	10,174	(NA)
Hired workers.................do......	1,925	2,060	2,329	2,119	2,679	3,190	3,391	3,381	(NA)

NA Not available.

[1] Source: Based in part on Bureau of the Census, Census of Agriculture statistics as summarized and published by the U.S. Department of Agriculture, Agricultural Statistics 1961 (1962), tables 632 and 634 and U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States: 1962 (1962), and Historical Statistics of the United States Colonial Times to 1957 (1960) p. 239.

[2] Source: Based on Bureau of the Census, Census of Agriculture Statistics as published for 1959 in U.S. Bureau of the Census, Statistical Abstract of the United States: 1962 (1962); and for earlier years in U. S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K61-72.

[3] The agricultural production and livestock production statistics are from table A1, appendix A, of this report. The crops production is from tables A1 and A12 and includes crops for seed and feed.

[4] Source: Compiled by the Agricultural Marketing Service, based in part on Census of Population and Census of Agriculture statistics as published for 1945-1959 in U.S. Department of Agriculture, Agricultural Statistics 1961 (1962), table 650 and for earlier years in U.S. Bureau of the Census, Historical Statistics of the United States, Colonial Times to 1957 (1960), Series K73, 74, and 75.

Increases in average production per acre of broad groups of farm products reflect in part shifts in the types of products produced. Thus, yield of wheat per acre increased between 1900 and 1950 by only 19 percent, whereas the increase for corn was 51 percent, and for cotton 48 percent. During the same period, the production of wheat increased by 70 percent, the production of corn by only 16 percent, and cotton production in 1950 was about one percent less than in 1900 although between the 1900-1904 period and the 1950-1955 period it increased by 44 percent.

The above table includes figures indicating the reduction in man-hours per acre and per production unit between 1900 and 1950. Man-hours per acre declined by 69 percent for wheat, 60 percent for corn, and 34 percent for cotton. An even greater reduction - 74 percent - occurred in man-hours per 100 bushels of wheat and of corn, and man-hours per pale of cotton dropped by 55 percent.

The percentage distribution of man-hours of labor devoted to the various segments of agricultural production, table 25, is of interest. Conclusions regarding productivity of labor should not be lightly drawn by relating figures in this table with those in table 21. A large unallocated farm maintenance labor figure is shown in table 25 which also includes with the crops figures data for crops used for feed and seed that are excluded in "crops" in table 21. But such comparisons do point up the areas of high or low labor requirements. For such large areas as cotton farming, between the 1920-1924 and 1950-1954 periods, production only declined from 11.5 to 9.6 percent while man-hours declined from 14.1 to 10.6 percent, reflecting rather clearly the rapid decline in the man-hours-per-bale rates shown previously.

Table 25.--Percent Distribution of Man-Hours Used for Farmwork by Commodity Group for Selected Periods: 1910-1954

Kind of enterprise	Percent of total man-hours used for farmwork[1]			
	1950-1954	1935-1939	1920-1924	1910-1914
All farmwork	100.0	100.0	100.0	100.0
Farm maintenance, including horses and mules	17.1	20.2	23.3	23.0
Crops, total	46.5	52.0	54.0	56.1
Food grains	2.1	2.9	4.0	3.9
Feed grains	9.1	14.9	17.4	18.6
Hay	3.5	4.3	4.5	3.8
Sugar crops	0.8	1.0	0.9	0.8
Fruits and nuts	4.7	3.6	3.2	3.5
Vegetables, including potatoes	7.8	7.0	5.8	5.2
Oil crops	1.2	0.9	0.5	0.3
Cotton	10.6	13.1	14.1	17.0
Tobacco	5.2	3.3	2.6	2.0
Miscellaneous crops	1.5	1.0	1.0	1.0
Livestock, total	36.4	27.8	22.7	20.9
Milk cows	17.8	16.6	12.8	11.5
Other cattle, hogs, sheep, and wool	10.1	6.1	5.5	5.5
Poultry	7.7	4.5	3.8	3.4
Other livestock[2]	0.8	0.6	0.6	0.5

[1] Based on U.S. Department of Agriculture, Major Statistical Series of the U.S. Department of Agriculture, Vol. 2 (1957), p. 11.

[2] Represents minor livestock enterprises, such as goats, bees, ducks, and geese.

PRICES OF DOMESTIC AND IMPORTED AGRICULTURAL PRODUCTS

The more rapid rise in agricultural prices than in the mineral products prices or in all wholesale prices prior to 1951 and their more rapid decline after that year has been discussed in chapter 7 and elsewhere. It is of interest to note the effect of imported products on the price series for all agricultural materials. In table 26, the price behavior, relative to all wholesale prices, of imported agricultural products not usually produced in the United States is compared with such price relatives for agricultural products commonly produced domestically. The primarily imported items included are crude rubber, shellac, bananas, coffee, tea, cocoa, hard fibers, silk, pepper, quinine sulfate, and a group of nut and vegetable oils and oilseeds. The price increases between 1900-1904 and 1950-1954 were about the same for both the imported and domestic groups, but the behavior was significantly different for many periods. Morevoer, prices of imported materials continued to rise until 1954 and then declined more rapidly than those of domestic materials.

The import series is dominated by the figures for coffee, tea, cocoa, and bananas which, for most of the period, showed price movements similar to those of domestic agricultural products, but with somewhat greater stability. Imports include, however, other significant components showing a long-time trend of falling prices. These include such items as rubber and silk that meet competition with synthetics, and such items as shellac, nut and vegetable oils, and quinine that meet competition with other preferred products. For rubber, the peak price was in 1910, with another peak attained in 1925 at less than half the earlier level. The 1951 wartime peak for rubber was only two-thirds of the 1925 peak. For silk, the price peak was in 1919, at more than double the 1961 price.

Table 26.--Indexes of Prices of Domestic and Imported Agricultural Materials, Relative to All Wholesale Prices, for 5-Year Periods 1900-1959 and for 1960 and 1961

(Index numbers 1954 = 100)

Year or period	Price index of agricultural materials		
	All materials	Domestic materials	Imported materials[1]
1961	91	92	51
1960	92	92	54
1955-1959	94	93	70
1950-1954	101	111	80
1945-1949	104	130	51
1940-1944	96	120	44
1935-1939	81	96	36
1930-1934	77	86	42
1925-1929	90	105	67
1920-1924	84	92	47
1915-1919	83	103	48
1910-1914	85	105	70
1905-1909	81	92	62
1900-1904	76	85	62

Source: Based on the series described in appendix B.

[1] Represents 11 commodities not usually produced in the United States.

Chapter 10.--TRENDS IN FISHERY, WILDLIFE, AND FOREST PRODUCTS

Fishery, wildlife, and forest products combined amounted to 16.5 percent of all raw materials produced in the United States in the first five years of the present century, and amounted to 17.4 percent of total consumption of raw materials. By 1960-1961 these percentages had fallen to 6.5 and 7.5 respectively. This decrease reflects the decline in production and consumption of sawlogs and miscellaneous forest products, including fuel wood. The grouped figures obscure increases in both production and consumption of pulpwood, fishery products, and wildlife products which accounted for only 2 percent of total raw materials consumption in the period 1900-1904 and for about 3 percent in the period 1960-1961.

Exports of fishery, wildlife, and forest products, likewise, declined--from 6 to 3 percent of total raw materials exports during the six decades. But imports of these materials increased roughly in proportion to the general rise in raw materials imports, amounting to 8 percent of all such imports in the early part of the century, and to 9 percent in the period 1960-1961. During most of the period 1915-1949, imports of wildlife products exceeded domestic production, throughout much of the present century imports of fishery products have been about two-thirds as large as domestic production, and in recent years imports of forest products have amounted to nearly one-sixth of U.S. production.

FISHERY AND WILDLIFE PRODUCTS

Although domestic production of fishery and wildlife products has increased by 70 percent since the beginning of the century, consumption increased during the same period by about 150 percent. Hence, there has been a significant increase in our dependence upon foreign supplies. Whereas, for the period 1900-1904, net imports of these products accounted for only 20 percent of domestic consumption, in recent years net imports have contributed 40 to 50 percent of total consumption.

Fishery products consumption during the present century has shown about the same rate of growth as agricultural food materials. Since 1900, consumption of fishery products increased by about 150 percent as per capita consumption rose somewhat. Domestic fishery output during the same period increased by only about 50 percent, with the consequence that net imports accounted for one-half of total consumption at the end of the period compared to one-sixth at the beginning. In recent years, about two-fifths of the landed catch from the Middle Atlantic, Chesapeake Bay, South Atlantic, and Gulf States, was menhaden, which is used primarily for industrial purposes. Another 10 percent was tuna and salmon from the Pacific Coast States and Alaska. A regional shift in the landed catch has been significant in recent years. In 1940, the Pacific Coast States, including Alaska accounted for 50 percent of the poundage and 40 percent of the value of the total catch; by 1960, these percentages for the area had dropped to 21 and 32, respectively. In the same period such percentages for the Gulf States had increased from 6 and 10 for 1940 to 26 and 24 for 1960.

The peak demand for furs was in 1946, at $229 million 1954 dollars, to satisfy postponed purchases from the war years. The next highest year was 1948, with $190 million. Since that time, annual consumption has varied between $144 and $164 million. At the beginning of the century and in recent years, imports of furs have been about twice as large as exports, but for a considerable intervening period imports were much more in excess of exports. In 1961, as at the beginning of the century, imports were about equal to domestic production. The fur import and export series are based on fairly adequate statistics. But the fur production series are much less reliable than those for other raw materials statistics and data to measure prices paid to producers for domestic raw furs are not available.

FOREST PRODUCTS

Production of forest raw materials was slightly less in the last decade than at the beginning of the century. Consumption, in the six decades, had increased by less than 10 percent and at the end of the period was only equal to the level of 1905-1915. Over the first five decades of the present century, prices of forest materials rose much more rapidly than for any other major group of raw materials (see chart 10). Nevertheless, in the sixth decade, as production and consumption of forest products increased somewhat from the 1945-1949 level, prices of these materials increased at only about the same rate as mineral construction materials prices, and at a slightly lower rate than prices of mineral fuels and metallic ores.

Within the forest products group, the production and consumption trends for pulpwood have been quite different from those for sawlogs and the "other forest products" subgroup of which fuel wood is the chief component. Production and consumption of pulpwood have grown by over tenfold since 1900, while the price of pulpwood has increased at about the same rate as for all raw materials. By contrast, the production of sawlogs has declined by about one-fifth and its consumption by one-tenth while prices increased tenfold and steel and other materials were used increasingly instead of lumber. "Other forest products" declined even more, production by about 30 percent, and consumption by 24 percent, this decline primarily reflecting the decreasing use of fuel wood.

At the beginning of the century, net exports of sawlogs (including the equivalent lumber) amounted to about 3 percent of domestic consumption. After World War II there was a change to a net import balance which has continually increased, reaching about 10 percent of consumption in 1961. The major portion of these imports represents the more cheaply produced Canadian lumber. In the case of pulpwood, the industry was on a net import basis to the extent of one-fourth of domestic consumption in 1900. Subsequently, net imports continued to grow until, during the 1920's, they averaged 54 percent of domestic consumption and remained at nearly that level in the succeeding decade. Thereafter, imports increased, but domestic production went up even faster, and in recent years domestic exports have become significant. So that beginning in the 1940's, net imports of pulpwood declined relative to consumption, amounting to only 23 percent of consumption in 1960-1961. In the "other forest products" group, prior to 1940 there was an export surplus as exports of naval stores more than offset imports of such items as camphor and cork. In recent years the situation was reversed as imports of veneer logs exceeded exports of naval stores.

It was noted in chapter 8 (see table 16) that, in 1958, the value of production per person engaged in forestry was about $6 thousand, as compared with less than $4 thousand for agriculture, having increased from about $5 thousand and $3 thousand in 1954, respectively.[1] The land requirements, however, are very different. In 1954, the total value of agricultural products per acre of land in farms was about $23 as compared with about $5 for forest products per acre for commercial forest land.[2] There are, of course, very significant variations in lumber yields of woods products. Commercial forest lands in the United States, including Alaska, are almost equally distributed between softwoods and hardwoods (see table 27). Nevertheless, about two-thirds of the volume of timber on these lands is softwood and only one-third hardwood. In 1952, about 79 percent of the total production was softwood lumber. Softwood is also abundantly available in Canada, the principal source of domestic imports.

Continued vigilance is required to assure a sustained adequate supply of forest products. Net annual growth is estimated by the U.S. Forest Service to have increased by 14 percent for growing stock and 9 percent for sawtimber[3] between 1944 and 1952, but production of forest products between the 1940-1944 and 1950-1954 periods increased by 5 percent. Net annual growth in 1953 was shown as 15.2 billion cubic feet in the United States, including Alaska, while timber cut was only 10.8 billion cubic feet. Nevertheless, "the quality of timber growth, like the quality of timber, is declining."[3] The adequacy of growth must continually be considered in detail on the basis of species and maturity of trees. Comparisons of the ratio of growth to timber cut for the continental United States are of interest:[4]

Species	Ratio of growth to cut			
	Sawtimber[5]		Growing stock[5]	
	1952	1944	1952	1944
All species.....	0.97	0.88	1.31	1.09
Eastern softwoods ..	1.21	0.90	1.16	0.93
Eastern hardwoods..	1.57	1.19	2.19	1.43
Western softwoods ..	0.49	0.60	0.70	0.82

For 1958, it has been estimated that 82 thousand persons were engaged in forest management and 341 thousand in forest harvesting, as compared with 73 thousand and 436 thousand, respectively,[6] for 1954; forest management increasing in this 4-year period from 14 to 19 percent of the total employment for such operations. Protection of forest stock is a continuing large endeavor. The annual mortality of growing stock in 1952 was estimated at about one-third the magnitude of total timber cut and the growth impact of this loss was estimated as in excess of the total cut (see tables 27 and 28). The major causes of mortality are insects, weather, disease, and fire in that order. But it was estimated for 1952 that the growth impact of these factors was in somewhat different order: disease, 45 percent of gross loss; insects, 16 percent; fire, 15 percent; and weather, 8 percent.

---

[1] The 1958 figures are expressed in 1954 dollars.

[2] There is some overlap in the use of forest land for pasture, about 10 percent of the land in farms is woodland, of which nearly two-thirds is pastured. Moreover, for all forest land about one-half is used for grazing and less than two-thirds of all land used for grazing is in farms. See tables 24, 27, and A1 of this report.

[3] See U.S. Department of Agriculture, Forest Service, Timber Resources for America's Future, Forest Resources Report No. 14 (1958), p. 150.

[4] U.S. Forest Service, ibid. p. 168.

[5] Sawtimber represents trees large enough and suitable for lumber. Growing stock includes not only sawtimber but also smaller trees which meet some commercial needs but are too small to be made into lumber.

[6] Source: U.S. Department of Agriculture, Forest Service, The Economic Importance of Timber in the United States (1963).

Table 27.--Forest Resources of North America: 1953

Item	United States	Alaska	Canada	Mexico
Land area..........Million acres..	1,904	366	2,218	487
Forest land..........do..........	648	136	951	64
Percent in softwood..........Percent..	52	78	75	14
Commercial forest land, total..........Million acres..	485	44	529	49
In softwood..........do..........	230	33	396	16
In hardwood..........do..........	255	11	133	33
Noncommercial forest land, total..........do..........	163	92	422	15
Productive but reserved..........do..........	15	(1)	(NA)	(NA)
Unproductive for timber..........do..........	149	92	(NA)	(NA)
On commercial forest land:				
Timber volume, total..........Billion cu. ft..	498	50	397	59
Softwood..........do..........	336	41	328	19
Hardwood..........do..........	162	9	69	40
Net annual timber growth[2]..........do..........	14.2	1.0	4.5	0.5
Annual timber cut..........do..........	10.8	(3)	3.6	0.7
Softwood[4]..........do..........	7.5	(3)	(NA)	(NA)
Hardwood[4]..........do..........	3.3	(3)	(NA)	(NA)

Source: U. S. Department of Agriculture, Forest Service, Timber Resources for American Future, Forest Resources Report No. 14 (1958), pages 158, 348, 349, and 504.

NA Not available.
[1] 0.2 million acres.
[2] Net growth is after allowance for mortality from fire, insects, disease, and other causes.
[3] Less than 0.05 billion.
[4] Represents figures for 1952.

Table 28.--Mortality and Growth Loss in Growing Stock on Commercial Forest Land in the United States and Coastal Alaska, by Causes: 1952

Cause and type	Growth impact		Mortality	Growth loss
	Billion cu. ft.	Percent of gross loss	(billion cu. ft.)	(billion cu.ft.)
Gross loss, total..........	11.21	100	3.51	7.70
Softwood..........	(NA)	(NA)	[1]2.24	(NA)
Hardwood..........	(NA)	(NA)	[1]1.25	(NA)
Fire..........	1.69	15	0.24	1.45
Disease..........	5.05	45	0.77	4.28
Insects..........	1.78	16	1.00	0.78
Weather..........	0.95	8	0.84	0.11
Animals..........	1.01	9	0.07	0.94
Miscellaneous[2]..........	0.73	7	0.59	0.14
Salvage from dead trees..........	0.77	7	0.77	...
Net loss..........	10.44	94	2.74	7.70

Source: U.S. Department of Agriculture, Forest Service, Timber Resources for America's Future, Forest Resources Report No. 14 (1958), pp 189 and 539.

NA Not available.
[1] Based on periodic trend mortality. Hence, does not add exactly to the total above which represents actual mortality in 1952.
[2] Includes such items as suppression, mortality, and growth loss due to logging injury.

Chapter 11.--TRENDS IN MINERAL PRODUCTS

The increasing share of minerals in the raw materials base of our economy has been one of the most striking raw materials developments in the last six decades. In the aggregate, minerals expanded from 16 to 32 percent of domestic raw materials production and from 16 to 35 percent of total raw materials consumption between the periods 1900-1904 and 1960-1961. In the same period minerals have also increased in foreign trade from 14 to 36 percent of total raw materials imports, and from 10 to 18 percent of exports.[1] In part, these trends reflect the decreasing portion for foods, from 60 to 51 percent of all raw materials consumed; but more significantly, they indicate the increasing importance of minerals among both energy and physical-structure materials.

The proportion of all energy furnished by the mineral fuels has increased from 73 to 93 percent between 1900-1909 and 1950-1961, when measured in terms of 1954 dollar values at the point of production (see table 34). Measured in terms of energy equivalents, this increase was from 86 to 97 percent (see table 35). Among the physical-structure materials, minerals increased over the same period from 22 to 42 percent of the total (see table 29). Each of the major minerals groups experienced similar increases: Iron and ferroalloy ores from 7 to 10 percent of total physical-structure materials, other metallic ores from 7 to 11 percent, mineral construction materials from 7 to 14 percent, and other minerals from 2 to 7 percent. These gains were at the expense of forest products, which declined from 44 to 22 percent of all physical-structure materials (although pulpwood increased from 1 to 5 percent). Meanwhile, agricultural nonfoods increased slightly from 34 to 36 percent of the physical-structure total.

As distinguished from agricultural, forest, fishery, and wildlife products which are reproducible, minerals have frequently been classed as exhaustible resources. This limitation is more economic than physical, however, since leaner reserves, all the way down to sea water, can usually supply the required mineral at appropriate cost. Moreover, reuse of secondary materials is a substantial source of supplementation of mineral reserves. Nevertheless, very significant portions of some of the richest U.S. mineral reserves have already been mined, and the extent to which domestic consumption is based on

---

[1] These import and export figures exclude movements of gold.

Table 29.--Percent Distribution of Consumption of Physical-Structure Materials in the United States: 10-Year Periods, 1900-1959, and for 1960 and 1961

Material	1961	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All physical structure materials, except gold, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agricultural nonfood and wildlife products, total	35.8	35.3	36.3	44.2	49.7	40.3	38.4	34.0
Agricultural nonfoods	34.4	34.0	35.0	42.4	47.8	39.0	37.3	32.5
Wildlife products	1.4	1.3	1.3	1.8	1.9	1.3	1.1	1.5
Forest products, total	22.7	22.4	22.3	21.8	23.5	31.0	35.8	43.6
Sawlogs	13.0	13.1	14.4	15.2	15.7	23.4	27.9	36.7
Pulpwood	5.4	5.4	4.9	3.7	3.5	2.4	1.5	1.1
Other forest products	4.3	3.9	3.0	3.0	4.3	5.2	6.4	5.8
Minerals, except gold, total	41.5	42.3	41.4	34.0	26.8	28.7	25.8	22.4
Metallic ores, except gold	18.1	19.7	22.7	21.4	15.8	17.4	16.6	13.4
Iron and ferroalloy ores	8.4	10.0	11.1	9.5	5.7	7.5	7.9	6.7
Other metal ores, except gold	9.7	9.7	11.6	11.9	10.1	9.9	8.7	6.7
Construction materials	15.8	15.3	12.1	7.6	7.6	8.3	6.8	7.0
Other minerals	7.6	7.3	6.6	4.9	3.4	3.0	2.4	2.0

Source: Based on appendix A, tables A4 and A5.

net imports reflects the adequacy and economic availability (considering comparative costs) of domestic mineral reserves. In recent years, net imports of mineral fuels have averaged 11 percent of domestic consumption and net imports of all mineral physical-structure materials 24 percent of consumption, while net imports of metallic ore equivalents have accounted for more than 40 percent of the Nation's requirements.

METALLIC ORES PRODUCTION AND CONSUMPTION

Throughout most of this report, gold has been omitted from the discussions because of its status as primarily a monetary metal. The price of gold is regulated by statute and the movements of gold into and out of the United States are determined primarily by fiscal policies, financial conditions in this and other countries, and the settlement of international balances, rather than by consumer demands for the metal. Its influence is particularly notable in the metals import, export, and consumption measures.

Trends in domestic metal mining, however, can hardly be discussed without reference to gold. Moreover, the absorption of gold by industry and in the arts is very considerable. In 1961 this absorption was nearly twice as large as the total new gold produced from domestic mines. The origins of nonferrous metal mining in the United States are intimately associated with the search for gold. For the four decades 1850-1890 gold mining was our chief metal-mining industry. The following table shows gold mining as a percent of the total value of products of the metallic-ores industries for each census year for which adequate data are available:

Year	Percent	Year	Percent
1958	2	1902	[1]36
1954	2	1889	[1]58
1939	22	1880	[1]64
1929	3	1870	[2]49
1919	[1]9	1860	85
1909	[1]23	1850	[3]88

[1] Combined figures tabulated in census reports for lode gold and silver operations have been adjusted to exclude mines primarily engaged in producing ores valued chiefly for silver.

[2] Probably understates importance of gold mining. Census coverage of gold appears incomplete for this year.

[3] Probably understates importance of gold mining, since the census report indicated that for this industry "A portion of the California returns was lost."

Measured in 1954 dollars, gold amounted to 21 percent of the total production of metallic minerals for the period 1900-1909, as compared with only 4 percent of the total in 1960-1961. Because of the statutory fixed price of gold, this industry tends to operate at a relative maximum when prices of other commodities are depressed.

Aside from gold, our largest domestic metal-mining industries have been iron ores and copper ores, and very recently uranium ores. The 1860 census showed that iron mining represented only 4 percent of the total value of products of the metallic-ores industries, while copper mining accounted for 6 percent. But by 1870, these percentages had risen to 28 percent for iron and 11, for copper. This iron-ore percentage was roughly representative of the relative importance of iron-ore mining for the next 40 years, while copper-ores mining increased until it exceeded iron-ore mining in value of products at the 1909 census. The 1958 census showed iron-ore mining as 37 percent of all metal mining, and copper ores mining, 25 percent.

All series shown in this report in terms of constant dollars exclude uranium. This omission becomes significant only at the end of the period. The 1958 minerals census indicated that the value of net shipments of the uranium-vanadium ores industry amounted to 14 percent of the total value of net shipments of the metal mining industries, as compared to between 2 and 4 percent in 1954, and only 0.3 percent in 1939.

Production and apparent consumption of all metallic ores, except gold and uranium, are compared in table 30 for 1900 through 1961. It is notable that the relative importance of iron ore and of copper ore in production has remained fairly stable over most of the period. At the same time, the domestic production of silver, lead, and zinc ores has declined relatively, with this decline compensated by increases in the ferroalloy ores, bauxite, and magnesium, titanium, and miscellaneous nonferrous metal ores. In the consumption pattern, however, iron ore has declined from 42 percent of the total in the 1900-1909 decade to 26 percent of the total in 1950-1959, copper ore increased from 19 to 22 percent of the total, and the percentage for lead and zinc ores declined from 14 to 12 percent. The significant increases for consumption were in the relative importance of the ferroalloy ores, from 8 to 23 percent of the total, and in bauxite, from less than 0.05 to 3.0 percent of the total.

The significance of aluminum as a metal is only partly indicated by these bauxite figures, since aluminum is the product of a more elaborate manufacturing process than is required for the recovery of iron or copper. In 1947, for example, while value added to raw materials in the manufacture of primary aluminum amounted to about 53 percent of the total value of primary aluminum produced (including the value added in the manufacture of alumina) the value added by manufacture of pig iron was only 19 percent and the value added for primary copper approximately 42 percent.

The change in the over-all position of the United States from a net exporter of raw materials at the beginning of the century to a net importer in the last decades has already been discussed. Table 11 has shown that there was a significant increase in these net imports as a percent of consumption for almost every major commodity group. However, by far the largest relative net imports in recent years are shown for the metallic materials, pulpwood, and fishery and wildlife products. In 1960, the United

Table 30.--Percent Distribution of Production and Apparent Consumption of Metallic Ores in the United States: 10-Year Periods, 1900-1959, and for 1960 and 1961

Material	Production								Consumption							
	1961[1]	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909	1961[1]	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All metallic ores, except gold and uranium ore, total........	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Iron and ferroalloy ores, total......	46.4	53.6	54.2	52.5	41.7	43.2	44.6	45.9	46.2	50.8	48.9	44.5	35.8	43.4	47.6	50.1
Iron ore..........................	36.6	44.0	45.2	45.1	36.4	40.0	41.2	44.6	23.8	31.4	25.9	24.0	21.8	32.4	36.2	41.5
Manganese ore......................	0.6	1.0	2.1	2.7	2.0	2.8	2.2	0.8	9.2	8.4	7.7	7.0	6.1	6.8	6.4	4.5
Chromium, cobalt, molybdenum, nickel, and tungsten ores.........	9.2	8.6	6.9	4.7	3.3	0.4	1.2	0.5	13.2	11.0	15.3	13.5	7.9	4.2	5.0	4.1
Nonferrous metal ores, except ferroalloy ores, gold, and uranium ore, total..............................	53.6	46.4	45.8	47.5	58.3	56.8	55.4	54.1	53.8	49.2	51.1	55.5	64.2	56.6	52.4	49.9
Silver ore........................	2.2	1.8	2.2	2.6	5.6	5.1	5.7	7.7	1.6	2.3	4.6	3.9	17.0	3.0	(2)	2.9
Copper ore.........................	38.7	33.2	29.4	28.3	31.8	31.9	32.2	29.7	26.6	23.9	21.8	26.7	17.7	22.5	23.3	18.8
Lead and zinc ores................	8.1	7.0	9.2	11.9	19.3	19.0	16.4	15.4	11.6	10.1	11.5	12.3	14.0	16.4	14.8	14.5
Bauxite............................	0.7	1.0	1.1	1.2	0.4	0.3	0.3	(2)	4.8	4.1	2.7	1.4	0.5	0.4	0.3	(2)
Antimony, cadmium, magnesium, mercury, platinum, tin, and titanium ores.....................	3.9	3.4	3.9	3.5	1.2	0.5	0.8	1.3	9.2	8.8	10.5	11.2	15.0	14.3	14.0	13.7

Source: Based on table A11.

[1] The most significant differences between the percentages shown for 1961 and 1960 reflect the long steel strike in 1961 which greatly reduced the level of iron ore production and consumption during the year.

[2] Less than 0.05 percent.

States was a net importer of every metal produced in any significant quantities except molybdenum and magnesium (see chart 14). Moreover, for 12 of the 18 metals shown in this chart, the United States imported more than 50 percent of its total apparent consumption. For lead and zinc, the percents imported were 60 and 53, respectively. In 1900, the United States was also a net importer of most of the minor metals, although ferroalloy materials were used in relatively much smaller quantities. At that time, however, net exports were shown for copper, zinc, and mercury.

The figures in table 31, showing net imports of metals as percentages of U. S. consumption, indicate that the United States is most deficient in the minor nonferrous metals. Only 31 percent of all ferroalloy materials came from domestic sources in 1960, and less than 12 percent for chromium, cobalt, and manganese. Percentage domestic deficiency in ferroalloy ores, however, has not changed very significantly since the second decade of the century. Rather, the large deficiency has attracted more attention because of the relatively greater use of ferroalloy materials. When iron and ferroalloy ores are combined, the percentage of domestic deficiency for the group is seen to more than double between the first decade of the twentieth century and 1960.

IMPACT OF SECONDARY METALS

The increase in domestic demand for metals is only partly indicated by the growth in consumption of primary metals already discussed. In the case of the major nonferrous metals, data are available to measure the relative growth since shortly before World War I of the processing of scrap or secondary metals for reuse. These secondary metals, as

Table 31.--Net Imports of Metallic Materials as Percents of Total United States Consumption: 10-Year Periods, 1900-1959, and for 1960 and 1961

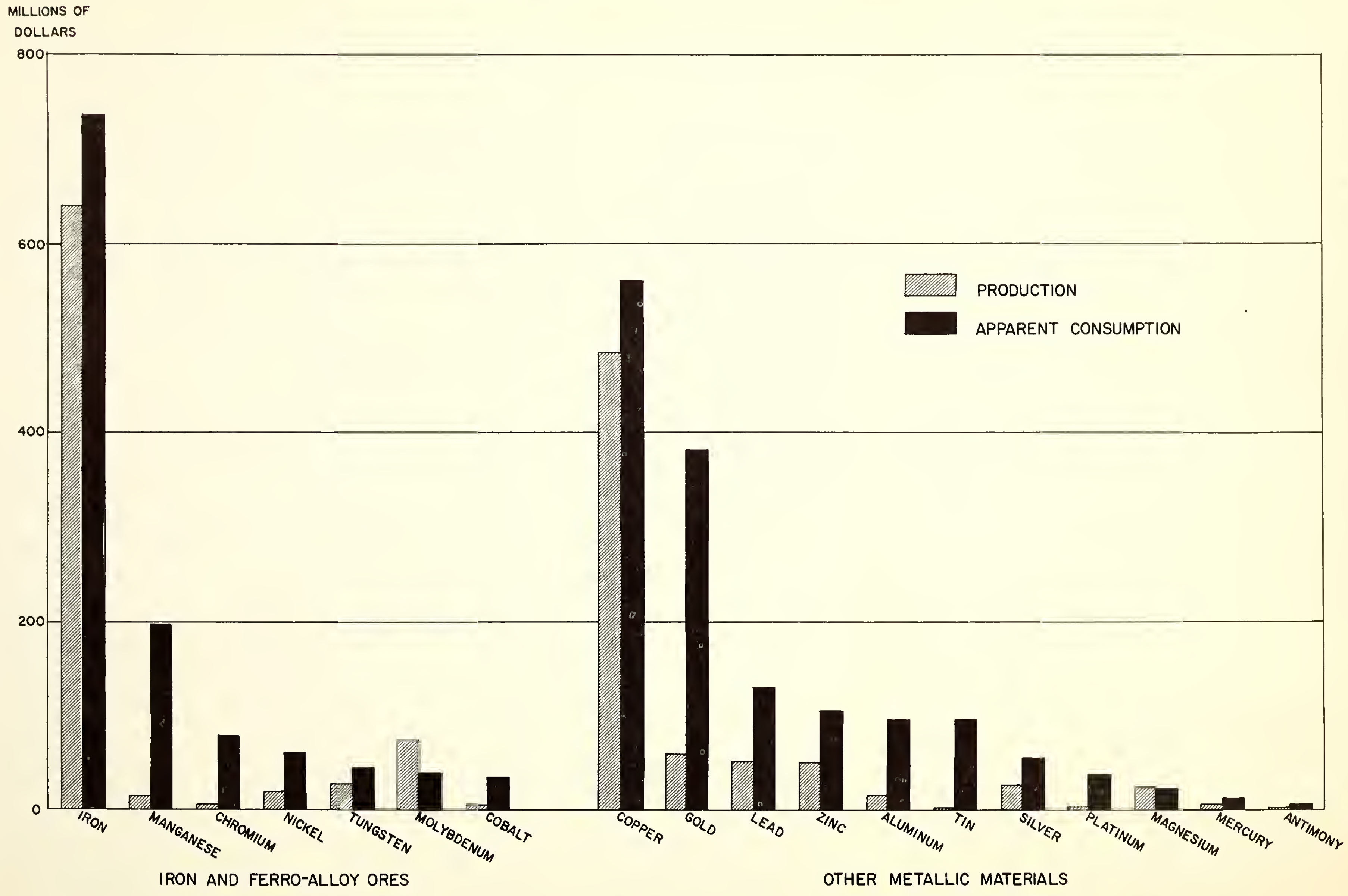
Material	1961	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All metallic ores, except gold and silver..............................	37	38	44	34	18	15	7	11
Iron and ferroalloy ores....................	37	34	40	23	16	13	8	14
Iron ore................................	3	13	5	-23	-20	-7	-13	-1
Ferroalloy ores..........................	72	69	79	76	73	74	71	86
Nonferrous metal ores, except ferroalloy ores, gold, and silver.....................	38	41	49	43	20	16	6	7
Copper ore...............................	8	14	27	31	-29	-23	-37	-48
Lead ore.................................	61	60	59	42	1	7	-7	6
Zinc ore.................................	50	53	53	29	2	-13	-16	-17
Bauxite..................................	90	85	79	42	46	37	33	(1)
Antimony, cadmium, magnesium, mercury, platinum, tin, and titanium ores.........	74	76	80	80	94	97	94	91

Source: Based on table A11. "-" indicates a net export.

[1] Less than 0.5 percent.

CHART 14.-PRODUCTION AND APPARENT CONSUMPTION OF METALLIC MINERALS IN THE UNITED STATES: 1960

(Measured in metal contained and 1954 values at point of production.)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

shown in table 32, accounted for about 15 percent of total primary and secondary production in the 5-year period, 1910-1914; whereas, by 1930-1934, secondary nonferrous metals were contributing 40 percent to total primary and secondary output. Thereafter, the contribution of these secondary metals declined somewhat, to 39 percent in the period 1945-1949, 36 percent in 1950-1954, 36 percent in 1955-1959, and 32 percent in 1960-1961.

For iron and steel scrap, the record extends back only to 1935. Such scrap appears to have constituted a slightly larger share of the total of pig iron and scrap consumption in the period 1935-1939 than in later years, amounting to 53 percent of the consumption total. In the 1940-1944 period, this was reduced to 50 percent, but averaged 51 percent throughout the three succeeding 5-year periods:

TONNAGES OF PIG IRON AND IRON AND STEEL SCRAP CONSUMPTION AS PERCENTS OF THEIR SUMS AND HOME AND PURCHASED SCRAP AS PERCENTS OF THE SAME SUMS

Period	Pig iron	Iron and steel scrap		
		Consumption	Home scrap production	Purchased scrap received
1961.......	50.6	49.4	29.5	21.2
1960.......	50.1	49.9	29.8	21.4
1955-1959..	49.3	50.7	29.0	23.8
1950-1954..	48.4	51.6	(NA)	(NA)
1945-1949..	48.6	51.4	(NA)	(NA)
1940-1944..	49.6	50.4	(NA)	(NA)
1935-1939..	46.6	53.4	(NA)	(NA)

NA Not available.

Source: For 1951-1961, U.S. Department of Commerce, Bureau of the Census, and U.S. Department of the Interior, Bureau of Mines, Current Industrial Reports "Iron and Steel Foundries and Steel Ingot Producers;" for 1935-1950, Bureau of Mines, Minerals Yearbook.

Unlike the figures given in table 32 for nonferrous metals scrap which represent old scrap only, these figures include both old and new material used for scrap. Separate figures for home scrap and purchased scrap were first available in 1955, home scrap amounting to 29 percent of all pig iron and steel scrap consumed in the 1955-1959 period, and to about 57 percent of the scrap total.

Among ferroalloy metals, nickel is the only one for which secondary production has been available for a considerable period. Secondary production of nickel amounted to over 85 percent of total domestic production for all 5-year periods available prior to 1955, but declined to 56 percent in the 1955-1959 period and to 46 percent for 1960-1961.

METAL ORES PRICES

Average prices of all metallic ores, relative to all wholesale prices, were only slightly lower in the decade after 1950 than at the beginning of the century, but they had been lower than all wholesale prices by about 20 percent during the periods 1920-1929 and 1940-1949. The prices of metallic minerals are subject to more pronounced fluctuations than those for other mineral raw materials. This reflects primarily the close association of the demand for these minerals with the status of the capital goods industries. Somewhat greater stability is indicated in the prices for iron and ferroalloy ores than in those for the other metal ores.

Over the last six decades, the price trends were considerably different for iron and ferroalloy ores and for nonferrous metals ores. Whereas the prices of iron and ferroalloy ores relative to all wholesale prices reached a peak in the last decade of 22 percent above the first decade of the century, and 42 percent above the lowest decade, 1910-1919, for nonferrous metals the relative prices were highest in the first decade, to the extent of 17 percent above the last decade when gold and silver are excluded.

Table 32.--Primary and Secondary Production of Nonferrous Metals, Except Precious Metals and Uranium: 5-Year Periods, 1910-1959, and for 1960 and 1961

(Measured in constant 1954 dollars. Secondary production represents old scrap only)

Period	Primary and secondary production (millions of dollars)	Percent of total production	
		Primary	Secondary
1961................	997	68.9	31.1
1960................	971	66.8	33.2
1955-1959................	987	64.5	35.5
1950-1954................	973	63.9	36.1
1945-1949................	871	60.7	39.3
1940-1944................	1,025	69.6	30.4
1935-1939................	683	64.3	35.7
1930-1934................	501	60.5	39.5
1925-1929................	891	70.5	29.5
1920-1924................	588	73.0	27.0
1915-1919................	703	82.9	17.1
1910-1914................	475	85.5	14.5

Source: Based on appendix A, table A12.

INDEXES OF METALLIC MINERALS PRICES RELATIVE TO ALL WHOLESALE PRICES

(1954 = 100)

Period	All metal ores, except gold	Iron and ferro-alloy ores	Other metallic minerals	
			Except gold	Except gold and silver
1961........	95	94	96	96
1960........	96	94	100	100
1950-1959...	98	95	101	100
1940-1949...	82	75	91	87
1930-1939...	87	91	84	80
1920-1929...	77	69	82	85
1910-1919...	90	67	104	110
1900-1909...	100	78	114	117

The prices of metallic minerals which were principally produced domestically and principally from foreign sources during the present century are shown in table 33, relative to all wholesale prices. The trends in price relatives for "principally domestic materials" follow fairly closely those for all metallic materials. By contrast, the prices of foreign metallic materials, with a few exceptions, rose more than all wholesale prices. The influence of foreign materials on the metal ores group index, of course, was less at the beginning of the century than in later years. For the weight base periods, the foreign materials price aggregates as percents of the all metal ores, except gold, aggregates were, for 1905-1909, 19 percent; for 1920-1924, 24 percent; for 1935-1939, 27 percent; and for 1950-1954, 31 percent.

The prices of metallic materials have risen slightly less in the last six decades than the average for all wholesale prices in spite of the declining grade of ores mined and the increasing amount of concentration required to render the ores suitable for smelting. For example, the average yield of copper per ton of ore mined was about 66 pounds in 1889 and about 53 pounds in 1902, as compared with only 18 pounds in 1950 and 15 pounds in 1961. Meanwhile, the grade to which milling ores were concentrated before smelting had increased from between 12-1/2 and 18 percent copper in concentrates for the period 1907-1920 to between 25 and 30 percent copper in concentrates in the period 1928-1951 and in the period 1957-1961 averaged annually between 24.6 and 25.1 percent.[2] This was accomplished in a period when the direct labor costs as a percentage of value of products was declining and average hourly earnings of workers increasing. Hence, these changes imply very significant increases in material handled per man-hour. This was made possible partly by an increase in horsepower available per production worker employed, for example--in the copper ore industry from 8 horsepower in 1902 to 72 in 1954.

MINERAL FUELS

The position of energy materials in our raw-materials base has been discussed in the section on "The Expanding Role of the Energy Materials" in chapter 5. In the last two decades, mineral fuels, measured in 1954 values at point of production, have furnished over 90 percent of all energy used in the

Table 33.--Indexes of Prices of Principally Domestic and Principally Foreign Metallic Minerals Relative to All Wholesale Prices: 5-Year Periods, 1900-1959, and for 1960 and 1961

(Index numbers 1954 = 100)

Year or period	Price index of metallic materials		
	All metals, except gold	Princially domestic materials[1]	Principally foreign materials[1]
1961..	95	98	88
1960..	96	102	85
1955-1959...	102	105	93
1950-1954...	93	93	95
1945-1949...	79	80	75
1940-1944...	89	87	93
1935-1939...	94	94	89
1930-1934...	79	79	79
1925-1929...	81	81	76
1920-1924...	73	81	58
1915-1919...	89	92	80
1910-1914...	92	98	78
1905-1909...	103	114	78
1900-1904...	97	103	68

Source: Based on the series described in appendix B.

[1] The distinction between principally domestic and principally foreign materials is based on the principal source of materials for the entire period 1900-1961. The "principally domestic materials" series represents copper, iron, lead, magnesium, mercury, molybdenum, silver, and zinc. The "principally foreign materials" represent antimony, bauxite, cadmium, chromium, cobalt, manganese, nickel, tin, and tungsten.

---

[2] These percentages were furnished by the staff of the U.S. Bureau of Mines.

United States. As energy materials increased from 15 to 26 percent of all raw materials use between 1900-1904 and 1960-1961, mineral fuels increased from 10 to 25 percent of this total.

More readily than for the physical-structure materials, one energy source may be substituted for another and energy-use patterns have varied greatly for specific energy sources. Over the six decades, coal declined from 64 percent of the total energy use in the first decade (measured in 1954 values at point of production) to 13 percent in 1960-1961, and fuel wood declined from 26 to 2 percent of the energy-use total (see table 34). During the same period, crude petroleum increased from 9 to 65 percent of the total energy use, natural gas and natural-gas liquids from 1 to 16 percent, and hydroenergy from 1 to 4 percent of total energy use. Hydroenergy has been included in this table, although omitted in the other raw-materials aggregates, because of the conceptual hurdle required if water power were treated as a raw material. Even in 1961, hydroenergy furnished only 4 percent of our energy requirements measured in terms of the 1954 value of hydroelectric energy at point of production. Hence, its omission in other broader series is of little consequence. Also, atomic energy, which is still negligible as a source of energy for nonmilitary purposes, has been omitted from the statistics throughout this report.

The shifts in energy sources indicated above, which are based on value-at-point-of-production weighted figures, are somewhat different and frequently greater than the indicated shifts when the energy materials use figures are weighted by factors for the inherent energy equivalents (for example, by kilowatt-hour equivalents, the international unit of energy). Such percentages are shown in table 35.

Table 34.--Percent Distribution of Consumption of Energy in the United States Measured in 1954 Dollars at Point of Production, by Source of Energy: 10-Year Periods, 1900-1959, and for 1960 and 1961

Energy source	1961	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All energy sources, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mineral fuels, total	93.4	93.4	93.0	90.4	85.0	87.0	81.9	73.5
Coal	12.9	13.7	18.0	31.7	35.8	49.4	64.4	63.7
Crude petroleum	64.6	64.2	62.1	50.9	43.5	34.0	15.7	8.6
Natural gas	10.5	10.3	8.2	4.7	3.5	2.2	1.6	1.2
Natural-gas liquids	5.4	5.2	4.7	3.1	2.2	1.4	0.2	0.0
Fuel wood	2.3	2.4	3.2	6.2	12.3	11.1	16.9	25.9
Hydroenergy	4.3	4.2	3.8	3.4	2.7	1.9	1.2	0.6

Source: For mineral fuels and fuel wood, see appendix A, tables A5 and A11. For quantity of hydroenergy see appendix C, table C4. The 1954 average unit value of hydrogenergy at point of production was supplied by the Federal Power Commission.

Table 35.--Percent Distribution of Consumption of Energy in the United States Measured in Kilowatt-Hour Equivalents, by Source of Energy: 10-Year Periods, 1900-1959, and for 1960 and 1961

Energy source	1961	1960	1950-1959	1940-1949	1930-1939	1920-1929	1910-1919	1900-1909
All energy sources, total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mineral fuels, total	97.2	97.1	96.7	95.3	92.4	93.4	91.2	86.3
Coal	21.9	23.0	29.4	49.3	54.5	68.0	79.3	78.8
Crude petroleum	41.4	41.0	40.2	31.3	27.0	19.2	8.1	4.5
Natural gas	30.6	29.9	24.3	13.2	9.9	5.6	3.8	3.0
Natural-gas liquids	3.3	3.2	2.8	1.5	1.0	0.6	0.0	0.0
Fuel wood	1.6	1.7	2.3	3.8	6.9	6.1	8.6	13.6
Hydroenergy	1.2	1.2	1.0	0.9	0.7	0.5	0.2	0.1

Source: See appendix C, table C4.

The striking change in energy sources is explained in part by consumer preferences for fluid fuels, in part by development of uses which require particular forms of energy (such as the automobile and the electric motor), and in part by the shift in price advantages between fuels. Table 36 shows a comparison of price relatives for the mineral fuels. These figures relate values at the mine, well, or producing plant to all wholesale prices. It is notable that coal prices increased most, while coal is the mineral fuel which has been falling behind in the competitive market. Meanwhile, natural gas and natural gas liquids prices declined most, and natural gas is the fuel which has been taking over the largest share of the coal losses.

Table 36.--Indexes of Prices of Mineral Fuels, Relative to All Wholesale Prices: 5-Year Periods, 1900-1959, and for 1960 and 1961

(Index numbers 1954 = 100. All values are at the point of production)

Period	All mineral fuels	Coal		Fluid fuels		
		Bituminous	Anthracite	Crude petroleum	Natural gas	Natural-gas liquids
1961	99	95	85	96	131	94
1960	99	96	85	96	164	99
1955-1959	101	102	94	100	109	97
1950-1954	95	107	108	94	81	100
1945-1949	90	112	106	86	70	112
1940-1944	80	98	100	76	89	107
1935-1939	83	87	98	83	111	134
1930-1934	79	79	126	72	151	128
1925-1929	84	74	107	91	153	200
1920-1924	98	100	95	103	155	277
1915-1919	69	67	55	81	109	330
1910-1914	65	62	60	68	140	232
1905-1909	65	68	59	68	135	xxx
1900-1904	74	71	62	100	174	xxx

Source: Based on the series described in appendix B.

The cost of energy and trends thereof to the ultimate consumer often differ significantly from these mine values, reflecting the high costs for transportation of bulky fuel materials and high costs for conversion to desirable liquid fractions, coke, or electric energy. In table 37, comparative figures are shown for the value of energy materials at the point of production and the amount paid by the manufacturing industries for their principal sources of energy. All unit costs are expressed in kilowatt-hour equivalents, the international unit of energy. Both the relative level of costs and the spread between the values at point of production and point of use are of interest. Thus in 1958, the value per kilowatt-hour was by far the lowest for natural gas at the well and was exceeded by 60 percent for coal, and by 319 percent for crude petroleum. For similar products received by manufacturing establishments, the spread is less, coal exceeding gas by only 9 percent, and fuel oil exceeding gas by 96 percent. For coal, the spread between the unit value at manufacturing plants and at the point of production appears to be increasing. The ratio of the two coal figures increased from 1.40 in 1947 to 1.50 in 1954, and to 1.52 in 1958. For gas the change was, in part, in the reverse direction, from 3.10 in 1947, to 2.19 in 1954, and to 2.24 in 1958.

The average prices at the mine, well, or producing plant of all mineral fuels have risen more rapidly over the six decades than the prices of other groups of mineral commodities and also more than all raw materials combined, but in the last 10 years the increase has been at about the same rate as for other major groups of mineral products. Since energy costs represent a very small proportion of total costs for many energy users, and since these materials are basically necessary for most users, relative increases in the over-all fuel bill are slow to limit total demands for energy, but the use of particular energy sources quickly responds to changes in the relative prices of various fuels.

It has been estimated that the reserves of the United States constituted more than a quarter of all the world coal reserves, over two-thirds of all oil-shale reserves, and about half of the ultimate reserves of oil and gas. Less than 2 percent of this coal in the United States has already been produced, but probably a considerably larger share of our oil

Table 37.--Unit Values at Point of Production and Unit Costs to Manufacturing Establishments for Energy, by Source: 1947, 1954, and 1958

Energy source	1958	1954	1947
Value at point of production per thousand kilowatt-hour equivalent[1] (dollars):			
Mineral fuels:			
Coal	0.67	0.64	0.58
Crude petroleum	1.76	1.63	1.13
Natural gas	0.42	0.36	0.19
Natural gas liquids	2.58	1.84	1.73
Fuel wood	(NA)	1.51	(NA)
Hydroenergy	(NA)	3.80	(NA)
Cost to the manufacturing industries per thousand kilowatt-hour equivalent[2] (dollars):			
Fuels purchased:			
Coal	1.02	0.96	0.81
Coke	2.62	2.15	1.55
Fuel oil	1.84	1.83	1.67
Gas	0.94	0.79	0.59
Electric energy purchased	8.85	9.23	9.29

NA Not available.

[1] For mineral fuels for 1958 and 1954, based on the Census of Mineral Industries; for 1947, based on Department of the Interior, Bureau of Mines statistics. For fuel wood, the quantity and cost figures were supplied by the Department of Agriculture, Forest Service. For hydroenergy, the unit cost was supplied by the Federal Power Commission. For factors used to convert the energy sources to kilowatt-hour equivalents, see appendix C, table C4.

[2] Based on the Censuses of Manufactures. For factors used to convert the energy sources to kilowatt-hour equivalents, see appendix C, table C1.

and gas. Oil-shale reserves in this country are still almost untapped on a commercial basis and amount to considerably more than the present estimates of world crude oil reserves.

The development of domestic reserves prior to 1949 has been roughly commensurate with domestic demands for mineral fuels, and the United States was a net importer of mineral fuels in only 2 years of this century prior to 1949: 1921 and 1922. Beginning in 1949, it became a net importer to an increasing extent, amounting, for 1960-1961, to 12 percent of all mineral fuels consumed. Net imports were even more important for crude petroleum, amounting to 19 percent of petroleum consumption, whereas coal exports in the same period amounted to 10 percent of domestic coal consumption.

MINERAL CONSTRUCTION MATERIALS

Raw mineral construction materials have increased about sevenfold in both domestic production and consumption since the beginning of the century. Consumption rose faster than production, however, and the net import balance of these materials rose from about 1 percent of total consumption in the first decade of this century to about 6 percent in the last two decades. Most of the growth in net imports was due to the large increase in asbestos imports, with gypsum also contributing to the inflow.

Over the first four decades of this century, production of these materials rose somewhat less than all minerals and less than most other minerals groups; but thereafter, as the building boom developed, output of construction materials grew more rapidly than any other major minerals groups. The extent to which construction materials from our pits and quarries have gained on sawlog output from our forests is indicated by the following figures:

CONSTRUCTION MATERIALS ANNUAL PRODUCTION

Item	Millions of 1954 dollars		Percent of total	
	1900-1904 average	1957-1961 average	1900-1904 average	1957-1961 average
Total	2,029	3,126	100	100
Mineral materials	298	1,670	15	53
Sawlogs	1,731	1,456	85	47

Of course, a considerable portion of lumber was also replaced by metals--in such items as building construction, automobile frames, and furniture.

Prices of mineral construction materials have risen less since the beginning of the century than prices for mineral fuels and metallic ores, but have risen at a slightly higher rate than mineral fuels in the last decade. Moreover, there has been no decline in the average annual price of these materials since 1940. Over the last six decades prices of mineral construction materials have increased about three-fold, as have the prices of all wholesale commodities, while the prices of all minerals rose nearly fourfold, and the price of sawlogs ninefold.

OTHER NONMETALLIC MINERALS

The components of this group in order of importance of production and consumption are chemical and fertilizer materials, such as sulfur, phosphate rock, and potash; miscellaneous nonmetallics, such as high grade clays, feldspar, mica, talc, peat, diatomite, and gem stones; and abrasives. Of all raw materials groups, the chemical and fertilizer materials have shown the most rapid production growth since 1900, and also the most pronounced shift from a net import to a net export basis over the period. During the first 5 years of the century, chemical and fertilizer materials net imports accounted for 29 percent of our apparent consumption while from 1957 through 1961 there was a net export surplus amounting to 3 percent of domestic consumption. The outstanding growth of output of these materials has been accompanied by the smallest price increase during the half century of any raw materials group--only 50 percent. The individual chemical and fertilizer materials that have contributed most to this output growth are sulfur, potash, phosphate rock, and salt.

Output of miscellaneous nonmetallics also grew rapidly over the period, running in recent years from eight- to ninefold that of the average for the first 5 years of the century. However, due primarily to the increasing use of mica in the expanding electronics industry and the greater market for gem stones made possible by higher per capita income, domestic consumption of these miscellaneous nonmetallics remained dependent upon foreign supplies for 34 percent of total consumption in recent years as compared to 57 percent in the first 5 years of the century. Graphite is another material in this group for which net imports account for the major portion of domestic consumption.

The smallest component of the other-nonmetallic-minerals group is made up of mineral abrasive materials. Although six or more different types of natural abrasive materials are produced domestically, the group is dominated by industrial diamonds. Since the early 1930's, net imports, consisting very largely of industrial diamonds, have contributed over half of domestic consumption of natural abrasives. During the 1950-1961 period, net imports of abrasive materials accounted for 84 percent of domestic consumption. Production of domestic natural abrasives has increased only 42 percent in the last six decades, the increase being primarily in materials such as pumice; tripoli; and quartz, ground sand, and sandstone for abrasive purposes. There were declines in production of flint, natural grindstones, millstones, and pulpstone, which are in large part being replaced by manufactured abrasives.

Chapter 12.--SIGNIFICANCE FOR THE FUTURE

The experience of the last six decades, as reflected in the measures presented in this study, throws some light on future requirements of the United States economy for raw materials. Chart 15 shows U.S. population 1900-1961 and population projections to 1980, compared with 2-year moving averages of the raw materials consumption figures (valued in 1954 dollars) by broad use classes for 1900-1961. Annual per capita consumption, by these use classes, is given in table 38.

These series show that aggregate per capita raw materials consumption at peak activity may be divided into three fairly distinct periods: Prior to 1920, when peak consumption was about $240 per capita; 1920-1940, with consumption peaks of about $250 per capita; and after 1940, with peaks of about $290 per capita. The rate of $290 was attained in 1944, and the only year thereafter with as high a consumption rate was 1956, at $296 per capita. A comparison of high and low rates of consumption by use class is of interest:

RAW MATERIALS CONSUMPTION RATES PER CAPITA

(In constant 1954 dollars)

Period	All raw materials		Foods		Energy materials		Physical-structure materials	
	Year	Dollars per capita	Year	Dollars per capita	Year	Dollars per capita	Year	Dollars per capita
	Highest rate of consumption							
1950-1961...........	1956	295.9	1956	146.5	1956	75.1	1950	75.7
1940-1949...........	1944	290.5	1944	156.9	1948	69.2	1941	79.8
1930-1939...........	1937	244.9	1939	134.9	1937	52.3	1937	61.0
1920-1929...........	1923	251.7	1923	136.4	1923	54.3	1929	65.6
1910-1919...........	1918	239.3	1912	137.1	1918	48.4	1914	64.0
1900-1909...........	1906	240.9	1904	142.9	1907	41.5	1906	65.2
	Lowest rate of consumption							
1950-1961...........	1958	276.0	1958	141.1	1950	67.2	1961	63.8
1940-1949...........	1940	256.8	1940	138.0	1940	54.8	1940	64.0
1930-1939...........	1932	201.0	1935	126.2	1932	39.7	1932	34.3
1920-1929...........	1921	201.3	1921	118.2	1922	44.1	1921	38.5
1910-1919...........	1915	222.0	1916	119.5	1914	40.7	1915	54.3
1900-1909...........	1900	214.6	1901	129.4	1900	31.6	1901	52.5
	Average rate of consumption							
1950-1961...........	....	285.2	....	143.5	....	71.3	....	70.4
1940-1949...........	....	278.7	....	146.6	....	61.4	....	70.6
1930-1939...........	....	224.6	....	129.7	....	46.1	....	48.8
1920-1929...........	....	239.2	....	130.6	....	49.7	....	58.8
1910-1919...........	....	233.4	....	129.5	....	43.2	....	60.7
1900-1909...........	....	229.2	....	135.2	....	36.0	....	58.1

Source: Based on table 38. See also footnote 5 on page 79.

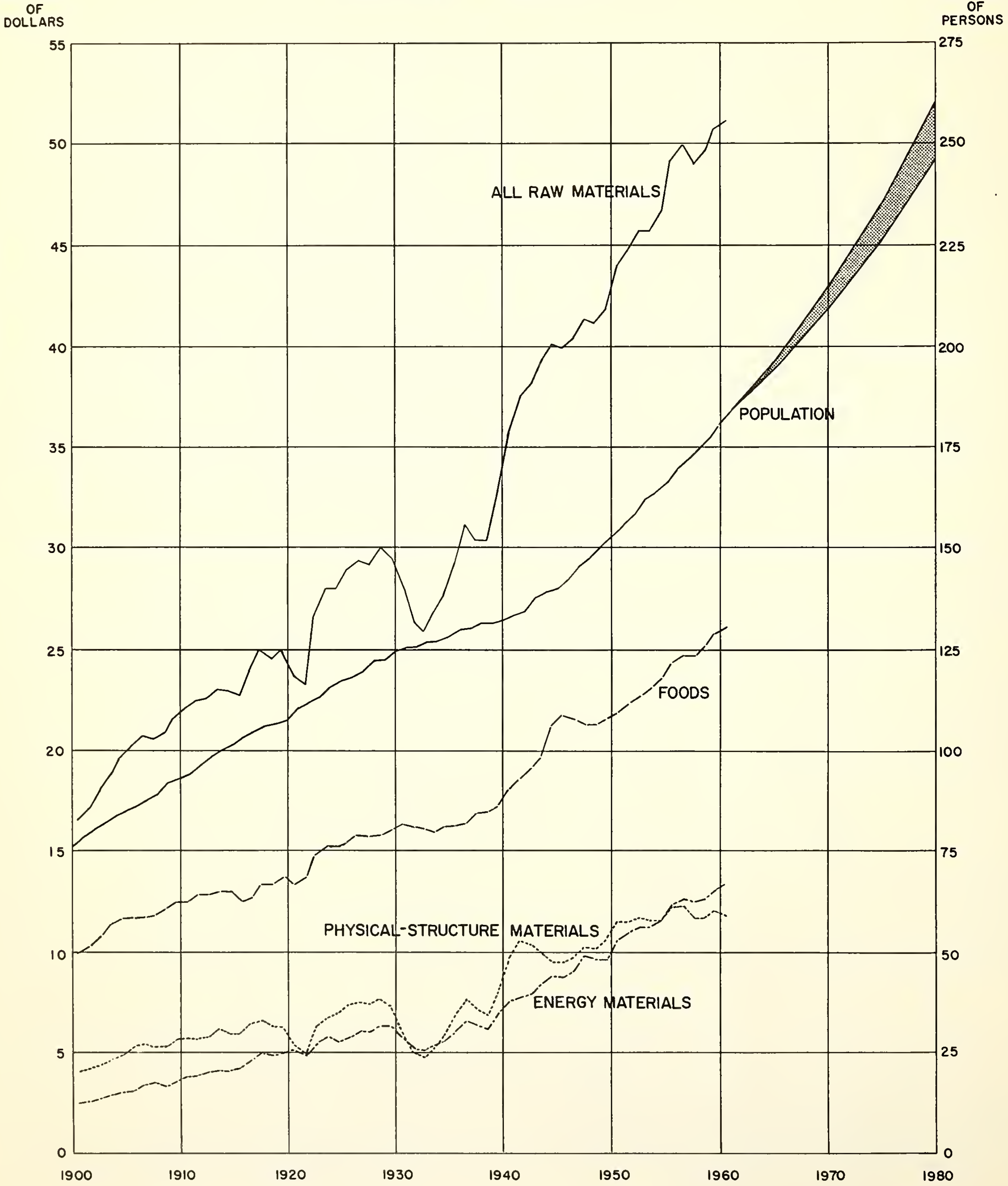
The trends indicated above are somewhat surprising:

1. For foods, there appears to have been no tendency toward increased per capita consumption since 1947. (The higher rates shown for 1943-1947 were probably artificially inflated by wartime conditions.) The highest rate for the post 1947 period was in 1956 at $146 per capita, the highest rate for other years of the period being $144, attained in 1953, 1955, 1959, and 1961. Moreover, the peak consumption rate of the last decade, in 1956, was only 2.5 percent above the 1904 peak for the first decade of the century.

2. For physical-structure materials, there appears to be no trend toward increased per capita consumption in the last two decades. In fact, there is an indicated downward trend. The peak in the 1950-1961

CHART 15-UNITED STATES POPULATION, 1900-1980, AND CONSUMPTION OF RAW MATERIALS, 1900-1961

(Consumption measured in constant 1954 dollars, and shown as 2-year moving averages. The highest and lowest Census projections of population are shown for the period 1965-1980.)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

Table 38.--Population and Per Capita Consumption of Raw Materials in the United States, by Broad Use Classes: 1900-1961

(Money figures in constant 1954 dollars)

Year	Population (millions)	Per capita consumption of--			
		All raw materials (except gold)	Foods	Energy materials	Physical-structure materials
1961	183.7	280.8	144.3	72.7	63.8
1960	180.7	281.7	143.0	72.9	65.8
1959	177.8	285.3	144.0	72.7	68.6
1958	174.9	276.0	141.1	70.7	64.2
1957	172.0	286.5	143.2	73.3	70.0
1956	168.9	295.9	146.5	75.1	74.3
1955	165.9	289.3	144.2	72.4	72.6
1954	163.0	277.8	142.4	67.4	68.0
1953	160.2	289.4	144.3	70.5	74.5
1952	157.6	286.1	143.6	69.6	72.8
1951	154.9	287.6	142.8	70.7	74.1
1950	152.3	285.7	142.8	67.2	75.7
1949	149.8	269.1	143.1	61.2	64.8
1948	147.2	285.3	143.7	69.2	72.5
1947	144.7	282.3	148.6	65.7	68.1
1946	141.9	280.9	151.1	61.8	67.9
1945	140.5	283.8	154.3	62.9	66.6
1944	138.9	290.5	156.9	63.5	70.1
1943	137.2	280.0	146.2	59.5	74.3
1942	135.4	278.6	142.9	57.6	78.2
1941	133.9	279.2	141.3	58.1	79.8
1940	132.6	256.8	138.0	54.8	64.0
1939	131.5	241.1	134.9	49.4	56.7
1938	130.5	224.4	129.5	46.5	48.5
1937	129.5	244.9	131.6	52.3	61.0
1936	128.7	237.5	130.5	49.5	57.4
1935	127.9	220.4	126.2	44.9	49.2
1934	127.0	214.1	129.3	43.5	41.4
1933	126.2	210.6	127.5	42.3	40.9
1932	125.4	201.0	127.0	39.7	34.3
1931	124.6	220.0	130.6	44.1	45.2
1930	123.6	232.2	130.0	48.9	53.3
1929	122.2	251.3	131.7	54.1	65.6
1928	120.9	241.3	129.9	50.2	61.1
1927	119.4	244.6	130.5	51.5	62.6
1926	117.8	248.9	134.0	50.9	64.0
1925	116.1	243.5	131.8	48.8	63.0
1924	114.4	240.5	132.9	49.1	58.5
1923	112.3	251.7	136.4	54.3	61.0
1922	110.4	227.7	131.6	44.1	52.0
1921	108.8	201.3	118.2	44.7	38.5
1920	106.8	240.9	129.2	49.7	62.0
1919	105.4	227.6	127.6	43.9	56.1
1918	104.9	239.3	127.4	48.8	63.2
1917	103.7	239.2	128.2	47.2	63.8
1916	102.3	225.5	119.5	43.5	62.4
1915	100.8	222.0	126.5	41.2	54.3
1914	99.4	237.3	132.6	40.7	64.0
1913	97.5	233.3	129.2	43.2	60.9
1912	95.6	237.7	137.1	41.5	59.0
1911	94.2	235.3	133.2	40.8	61.3
1910	92.7	236.4	133.4	41.4	61.6
1909	90.8	235.2	136.5	37.1	61.6
1908	89.0	229.7	134.7	37.7	57.4
1907	87.3	235.9	132.7	41.5	61.6
1906	85.7	240.9	138.6	37.1	65.2
1905	84.0	233.9	136.6	37.6	59.8
1904	82.4	236.7	142.9	35.6	58.2
1903	80.8	227.9	136.4	36.5	55.0
1902	79.4	222.5	133.9	32.1	56.5
1901	77.8	214.8	129.4	32.9	52.5
1900	76.3	214.6	129.9	31.6	53.1

Source: "Population" represents Census estimates (including Alaska and Hawaii) for July 1 of each year. For the periods 1917-1919 and 1930-1961, includes armed forces overseas. The "Per capita consumption" figures were computed by dividing appropriate figures in table A-5 by these "population" figures.

period was in 1950 at $76 per capita, and the peak in the preceding decade was in 1941 at $80. This 1950 peak consumption rate was only 16 percent above the first decade peak in 1906.

3. For energy materials, by contrast, there has been a consistent upward trend in per capita consumption throughout the six decades. This trend is notable in both the high rates and low rates series, a reversal in direction occurring only during the depression period of the 1930's. The 1956 per capita peak was 81 percent above the 1907 peak of the first decade. This upward trend is so marked that one immediately questions what effect the unit value weights have on this area where a striking change in energy sources has occurred. The following table shows a comparison of the high and low energy consumption rates, shown in the above table, with corresponding rates based on the energy equivalents of the energy materials:

ENERGY MATERIALS CONSUMPTION RATES PER CAPITA

Period	Unit value in 1954 at point of production weights		Energy equivalent weights	
	Year	Dollars per capita	Year	Thousand kwh per capita
	Highest rates for each decade			
1950-1961...	1956	75.1	1956	73.0
1940-1949...	1948	69.2	1948	69.4
1930-1939...	1937	52.3	1937	53.2
1920-1929...	1923	54.3	1923	60.6
1910-1919...	1918	48.8	1918	59.1
1900-1909...	1907	41.5	1907	50.2
	Lowest rates for each decade			
1950-1961...	1950	67.2	1954	65.1
1940-1949...	1940	54.8	1940	55.1
1930-1939...	1932	39.7	1932	39.2
1920-1929...	1922	44.1	1922	47.8
1910-1919...	1914	40.7	1914	48.3
1900-1909...	1900	31.6	1900	34.6
	Average rates for each decade			
1950-1961...	1950	71.3	1950	69.9
1940-1949...	1940	61.4	1940	62.2
1930-1939...	1930	46.1	1930	46.6
1920-1929...	1920	49.7	1920	54.9
1910-1919...	1910	43.2	1910	52.0
1900-1909...	1900	36.0	1900	41.7

Source: Based on table 38 and appendix C, table C 4.

Although the rate of increase in the energy equivalent weighted series is considerably lower than with unit value weights, 45 percent between the 1907 and 1956 peaks, there is the same definite upward trend.

Many projections of requirements for specific groups of raw materials have been made in the last decade, one of the most comprehensive being the recent Resources in America's Future,[1] by the staff of Resources for the Future, Inc. Most of these projections, like those in the original President's Materials Policy Commission (PMPC) report, are based on detailed analyses of the trends and probable requirements for individual commodities. One of the difficult problems in developing such projections is proper allowance for substitutions among raw materials. Projections based on the behavior of broad groups of commodities reduce such difficulties. In 1954, Stacy May used the detailed PMPC projections to arrive at broad use class projections comparable to those presented in Census Working Paper No. 1. He pointed out at that time that the two sets of estimates were very closely in line.[2] It is of interest again to make use of the broad use class technique to take a look at some rough conjectures of the level of raw materials requirements one and two decades hence.

For this purpose, consideration might be given to average and also high and low per capita consumption of raw materials rates. For foods and physical-structure materials, there is no apparent upward trend in per capita rates since the 1940's and no apparent increase in the spread between high and low figures. It would not seem unreasonable, therefore, to assume that the high and low consumption rates for these materials, for the 1970 and 1980 periods, will be approximately the same as in the last two decades. For energy materials, while there seems no persistant indication of an increasing spread between high and low rates, it seems most reasonable to assume that the long increase in rates of use of energy materials will continue.[3] These assumptions yield the following conjectured rates for the decades centered at 1970 and 1980:

CONJECTURED RAW MATERIALS CONSUMPTION RATES PER CAPITA

(In constant 1954 dollars)

Midpoint of decade period	All raw materials	Foods	Energy materials	Physical-structure materials
	Highest rate of consumption			
1980.......	322	147	99	76
1970.......	315	147	92	76
	Lowest rate of consumption			
1980.......	296	141	91	64
1970.......	289	141	84	64
	Average rate of consumption			
1980.......	309	144	95	70
1970.......	302	144	88	70

---

[1] Hans H. Landsberg, Leonard L. Fischman, and Joseph L. Fisher, Resources in America's Future, The Johns Hopkins Press, 1962.

[2] Stacy May, The Outlook for Raw Materials Demand in 1980 and its Relation to Economic Development, Geneva Economic Conference 13/281, Meeting No. 20, 1954.

[3] Semilog lines were fitted to the energy series to project these rates.

Chart 16 shows per capita consumption, by use class, placing emphasis on the rate of change in these factors by employing a semilog scale. It includes the conjectured ranges in raw materials requirements shown above for the next two decades in terms of the rough approximations referred to above.

The Bureau of the Census has projected the population of the United States to 1980 on the basis of two different assumptions regarding fertility.[4] Both of these projections are shown in chart 15. For 1970, the lower rate yields a population estimate of 208.9 million and the higher rate yields a population estimate of 214.2 million, as compared with the 1961 population of 183.7 million. For 1980, similar population projections are 245.7 million and 259.6 million. The above conjectured per capita consumption rates have been used in conjunction with these population projections to yield some possible ranges in raw materials total requirements for the periods centered at 1970 and 1980. Shown for comparison with these figures are average consumption figures centered around the end of earlier decades (based on appendix A, table A-5).

CONSUMPTION OF RAW MATERIALS

Period	All raw materials	Foods	Energy materials	Physical-structure materials
	Billions of constant 1954 dollars			
1980 conjectured high	83.6	38.2	25.7	19.7
1980 conjectured low	72.7	34.6	22.4	15.7
1980 conjectured average	78.2	36.4	34.1	17.7
1970 conjectured high	67.5	31.5	19.7	16.3
1970 conjectured low	60.4	29.5	17.5	13.4
1970 conjectured average	63.9	30.5	18.6	14.8
1960 (1958-1961 average)	50.4	25.7	12.9	11.8
1950 (1948-1952 average)	43.1	21.8	10.3	11.0
1940 (1938-1942 average)	34.0	18.2	7.1	8.7
1930 (1928-1932 average)	28.2	16.0	5.8	6.4
1920 (1918-1922 average)	24.4	13.6	5.0	5.8
1910 (1908-1912 average)	21.7	12.5	3.7	5.5
1902 (1900-1904 average)	17.7	10.7	2.7	4.3
	Percents of total			
1980 (conjectured average)	100.0	46.6	30.8	22.6
1960 (1958-1961 average)	100.0	51.0	25.6	23.4
1940 (1938-1942 average)	100.0	53.5	20.9	25.6
1920 (1918-1922 average)	100.0	55.7	20.5	23.8
1902 (1900-1904 average)	100.0	60.4	15.3	24.3
	Percent increases between successive periods			
1960-1980 (conjectured)	55.1	41.6	86.0	50.0
1940-1960	48.2	41.2	81.7	35.6
1920-1940	39.3	33.8	42.0	50.0
1902-1920	37.9	27.1	85.2	34.9

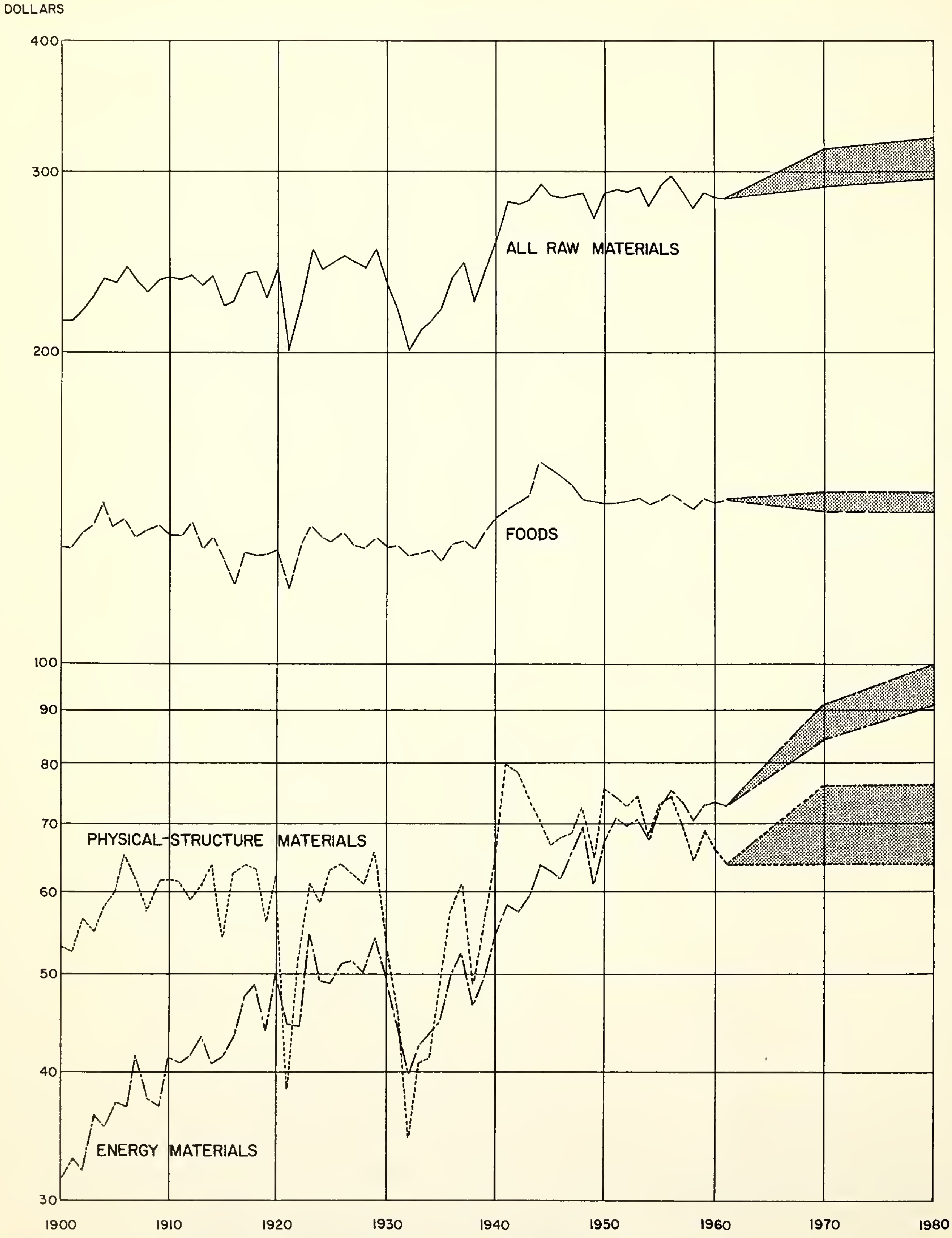
These figures emphasize the increasing extent to which concern for the adequacy of raw materials is likely to be dominated by concern for the adequacy of energy sources. Human ingenuity and the abundance of relatively low-cost energy supplies have made possible the increasing satisfaction of the U.S. economy's demands for food and physical goods without continuing increases in per capita requirements for food and physical-structure materials. This balance has been accomplished by

---

[4] See U.S. Bureau of the Census, Current Population Reports, Population Estimates, Series P-25, No. 251 (July 6, 1962).

CHART 16.- PER CAPITA CONSUMPTION OF RAW MATERIALS IN THE UNITED STATES, 1900-1961, AND CONJECTURES FOR 1970 AND 1980

(SEMILOG SCALE)



U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS

more and more elaborate fabrication and by interchanges among commodities. Each fabrication and each substitution, however, has usually required more energy. It seems inevitable that the future will see a marked increase in the efficiency of energy use. Nevertheless, increasing vigilance is required regarding the availability of energy supplies in terms of quantity, quality, and the economic cost to the consumer.[5]

No attempt has been made to project price trends to future decades. There is no present indication that shortages of raw materials in the near future will force the rate of increase in raw materials prices to significantly exceed that for all wholesale prices. Without international trade, however, the outlook might be considerably different. Prior to the 1945-1949 period, prices of all raw materials had risen somewhat faster than all wholesale prices, but thereafter this trend seems reversed (see index table below). It is significant, nevertheless, that there appears to have been a long-term trend of rising relative prices for energy materials, and that the 5-year price-relative averages for these materials show a consistent upward march in the last two decades. With the probable increase in relative importance of energy materials, a continuation of this price trend would increasingly force up the average for all raw materials.

PRICE INDEXES FOR RAW MATERIALS RELATIVE TO ALL WHOLESALE PRICES, BY BROAD USE CLASSES

Period	Relative price indexes (1954 = 100)			
	All raw materials	Foods	Energy materials	Physical-structure materials
1960-1961	92	85	99	94
1955-1959	94	90	101	97
1950-1954	101	105	95	100
1945-1949	104	116	90	95
1940-1944	96	107	80	91
1930-1939	79	85	80	74
1920-1929	87	93	91	83
1910-1919	84	97	68	79
1900-1909	78	85	70	79

Source: Based on appendix B, table B1.

---

[5] The figures for energy materials shown throughout this report are somewhat overstated and those for physical-structure materials somewhat understated due to the use of the products of energy materials for physical-structure purposes, such as for synthetic rubber, carbon black, and as other chemical raw materials, for asphalt, lubricants, waxes, and road oil, and as carbon in iron or electrodes. Approximate adjustments for such uses can be made for the later years. However, the magnitude of such uses is relatively small and there is little difference in the trends indicated by the adjusted series. For example, the adjusted figures for consumption rates per capita in constant 1954 dollars for the last two periods shown on page 73 would be approximately:

Period	Energy materials		Physical-structure materials	
	Year	Dollars per capita	Year	Dollars per capita
	Highest rate of consumption			
1950-1961	1956	71.7	1950	78.3
1940-1949	1948	66.7	1941	81.8
	Lowest rate of consumption			
1950-1961	1954	64.5	1958	67.4
1940-1949	1940	53.2	1940	65.7
	Average rate of consumption			
1950-1961	....	68.0	....	73.5
1940-1949	....	59.3	....	72.7

Footnote continued on page 80.

The effect on the raw materials use classes of the 1954 weight base rather than a 1935-1939 weight base period is also of interest. Figures comparable to those on page 77 for the ends of the last four decades are shown below on the basis of the 1935-1939 weights:

CONSUMPTION OF RAW MATERIALS

Period	All raw materials	Foods	Energy materials	Physical-structure materials
	Billions of constant 1935-1939 dollars			
1960 (1958-1961 average)...................	21.3	10.9	5.3	5.1
1950 (1948-1952 average)...................	17.9	9.2	4.1	4.6
1940 (1938-1942 average)...................	14.0	7.6	2.8	3.6
1930 (1928-1932 average)...................	11.7	6.8	2.3	2.6
	Percents of total			
1960 (1958-1961 average)...................	100.0	51.3	24.7	24.0
1940 (1938-1942 average)...................	100.0	54.5	20.1	25.4
	Percent increases between successive periods			
1940-1960..................................	52.2	43.3	87.4	43.5

Thus, use of the earlier weight base yields nearly the same percentage distribution of raw materials use. However, the percent increases during the 1940-1960 period appear somewhat greater for all of the use classes shown.

Appendix A.--THE MEASURES OF RAW MATERIALS PRODUCTION, IMPORTS, EXPORTS, AND CONSUMPTION AND METHODS OF CONSTRUCTION

Measures of production, apparent consumption, and net exports of raw materials in the United States were constructed for the period 1900-1950 by the President's Materials Policy Commission (PMPC). These series furnish the starting point for the measures of production, imports, exports, and apparent consumption presented in this report (see tables A1 through A11). For Bureau of the Census Working Paper Number 1, some revisions were made in the PMPC series, partly by including additional component series in order to increase coverage, and partly by substituting more reliable data for some of the figures previously used. In that report, also, separate measures for gross imports and exports of raw materials were developed for the first time and all series were extended to cover 1951 and 1952. In both of the earlier reports, all series were presented in terms of average 1935-1939 dollars.

With the availability of statistics from the 1954 Census of Mineral Industries and extensively revised statistics on supply and utilization of farm commodities prepared by the Agricultural Marketing Service, it seemed imperative that the production, import, export, and consumption series be revised and brought up-to-date before they were republished in detail. It also seemed desirable that the basic measures be presented in terms of post-war dollars.

While making these revisions, the entire detail of construction of the series was reviewed and many refinements were introduced. In the present report the basic series are presented in terms of both 1954 dollars (tables A1, A2, A3, and A4) and 1935-1939 dollars (tables A6, A7, A8, and A9). Statistics for more detailed mineral commodity groups are published than were shown in the earlier reports. These are presented in 1954 dollars (table A11). Also, the types of series previously included by broad use classes are reproduced in terms of 1954 dollars (tables A5 and A10).

The following paragraphs describe details of the methods and sources used, parts of which are reprinted from the previous reports.

GENERAL METHODS EMPLOYED

The aggregate measures of physical volume of raw materials are in terms of constant 1954 or 1935-1939 dollars. Development of these series by use of constant-dollar-value weights makes it possible to add together in a significant manner the output of such different raw materials as bales of cotton, barrels of oil, tons or ore, and cubic feet of gas.

These aggregate physical-volume measures were obtained by multiplying the physical quantity of each raw material for a given year by the average unit dollar value of the material for 1954 or for the period 1935-1939, and then adding together for the given year all of these dollar values. For materials produced domestically, the unit-value weights represent averages at point of production for all of the specified materials which were produced in the United States in 1954 or in the period 1935-1939. For materials which were not produced domestically in these periods, the weights represent comparable average unit values for imported materials during the same periods.

Except for agricultural materials in the period 1924-1961, the raw materials "consumption" figures represent "apparent consumption" computed from production by adding imports and subtracting exports. The raw-materials consumption figures were constructed to approximate the raw-materials requirements for the end-use products consumed in the United States. This was done by including, insofar as feasible, in the import and export aggregates the raw-materials equivalents of semifabricated and fabricated products.

SCOPE OF THE SERIES

It has been estimated that the aggregate raw-materials measures cover over 95 percent of all production and consumption in the United States. Certain components of the series, however, are somewhat more comprehensive than others. Coverage is discussed more fully in the following sections which describe the series for specific materials.

The basic production series represent primary production only, although available data for secondary production of nonferrous metals for the period 1910-1961 have been used to develop supplemental series. These series are shown in table A12.

The production series for minerals, forest products, and fishery and wildlife products represent all States; but for agricultural materials they represent 48 States only, excluding Alaska and Hawaii. The import and export data relate to the trade of the United States, and, except for agricultural materials, include noncontiguous areas--Alaska, Hawaii, Puerto Rico, and (for the period 1935-1939 only) the Virgin Islands.

SOURCES OF DATA USED

Insofar as feasible, primary sources were used for the data required in constructing these measures. The figures on agricultural production came primarily from the Agricultural Marketing Service (AMS) and those on forest products from the Forest Service, U.S. Department of Agriculture. The basic figures on fish and wildlife production were developed by the Fish and Wildlife Service, U.S. Department of the Interior. The primary source of the mineral production series is the Bureau of Mines, U.S. Department of the Interior; the minerals unit-value weights are based partly on Bureau of Mines figures but primarily on Bureau of the Census data. The figures for imports and exports were compiled by the Bureau of the Census; however, for some of the raw-materials series secondary sources were used for the foreign-trade figures, representing statistics compiled from these census figures by the agency collecting the production data.

AGRICULTURAL MATERIALS

For the period 1924-1961, the series for production, imports, exports, and consumption are based primarily on the new series for supply and utilization of farm commodities developed by the Agricultural Marketing Service. (See Major Statistical Series of the U.S. Department of Agriculture, Volume 5, Consumption and Utilization of Agriculture Products, Agriculture Handbook No. 118, December 1957 and U.S. Department of Agriculture, Measuring the Supply and Utilization of Farm Commodities, Agriculture Handbook No. 91, November 1955.) These series include essentially all farm commodities produced domestically and imported "complementary and supplementary commodities." The former represent those that do not compete directly with commodities produced in the United States, such as coffee, tea, cocoa, bananas, and some oilseeds. They exclude rubber and other gum products, silk, and vegetable fibers, such as sisal, hemp, and abaca, because they compete more directly with industrial products. They also exclude spices. For the census series, imports and consumption have been adjusted to include such foreign farm commodities.

The AMS series are in terms of 1947-1949 average farm prices for the period 1924-1954. For 1955-1961, average farm prices for 1957-1959 were used. These prices represent receipts by farmers for their products sold at local markets or at the point to which they deliver their products in their own conveyances or in local conveyances hired for the purpose. For commodities not produced domestically, import prices for the first domestic transaction were used. The detailed series for groups of commodities, such as "fresh vegetables" and "dairy products" were converted to 1935-1939 and 1954 constant dollars by means of price relatives for the respective series supplied by AMS.

The basic AMS series are on a gross basis. For census use, these were adjusted to a net basis by excluding from the production and consumption series seed and feed consumed domestically. Both published and unpublished AMS series were used in making these adjustments.

The census consumption series include military takings but are adjusted, insofar as possible, to exclude from consumption and treat as exports quantities shipped for civilian use in liberated and occupied areas.

The AMS consumption series are adjusted for changes in stocks, and the census series for agricultural materials are, therefore, presented as actual consumption rather than apparent consumption. However, no stock adjustments were made in the imported farm products series not represented in the AMS series.

In accordance with the objectives of the census series, the AMS imports and exports series include the raw materials equivalent of the major manufactured products produced from agricultural materials.

Checks which have been made within the Department of Agriculture indicate that the AMS series represent over 95 percent coverage.

For years prior to 1924, the AMS commodity group series were extrapolated back to 1900 by use of production, imports, and exports measures for major components of such series or for closely related series. These series are less precise than the measures for 1924 and later years and no attempt was made to adjust the derived apparent consumption figures for this early period for changes in stocks.

Production Series.--The AMS agricultural production series used for 1924-1961 measures crop production at the point of harvest and livestock products in terms of marketings for consumption. The basic production figures for these measures are compiled by the Agricultural Marketing Service. These series represent "gross production of all farm commodities." They have been adjusted to a net basis by excluding feed and seed. The AMS production series was also adjusted to exclude the farm value of imported cattle and hogs which is implicitly included in this series. (See table A13.)

The agricultural products represented at the farm level in the AMS series are:

Crops:
  Food grains:
    Buckwheat
    Rice
    Rye
    Wheat

  Feed crops:
    Barley
    Corn
    Grain sorghums
    Oats

  Sugar crops:
    Maple sugar
    Maple syrup
    Sorgo syrup
    Sugar beets
    Sugarcane for sugar
    Sugarcane syrup

  Fruits and tree nuts:
    Almonds
    Apples
    Apricots
    Avocados
    Blackberries
    Cherries
    Cranberries
    Figs, dried
    Filberts
    Grapefruit

Crops--Continued
  Fruits and tree nuts--Continued
    Grapes
    Lemons
    Limes
    Nectarines
    Olives
    Oranges
    Peaches
    Pears
    Pecans
    Pineapples
    Plums
    Prunes, dried
    Raspberries
    Strawberries
    Tangerines
    Walnuts

  Potatoes, sweet potatoes, and dry beans and peas:
    Beans, dry edible
    Peas, dry field
    Potatoes
    Sweet potatoes

  Fresh vegetables:
    Artichokes
    Asparagus
    Beets
    Broccoli

Crops--Continued
Fresh vegetables--Continued
Brussell sprouts
Cabbage
Cantaloupes
Carrots
Cauliflower
Celery
Cowpeas for peas
Cucumbers
Eggplant
Garlic
Kale
Lettuce and escarole
Lima beans
Onions and shallots
Peas, green
Peppers
Snap beans
Spinach
Sweet corn
Tomatoes
Watermelons
Other vegetables

Oil crops:
Cottonseed
Flaxseed
Peanuts
Soybeans
Other oil crops

Crops--Continued
Cotton lint

Tobacco

Livestock:
Dairy products and honey:
Butter
Cream
Honey
Milk

Meat animals:
Cattle and calves
Hogs
Sheep and lambs

Poultry and eggs:
Chickens
Eggs
Turkeys

Mohair and shorn wool:
Mohair
Wool, shorn

For the years 1909-1923, the product group figures were extrapolated from 1924 by means of indexes of production for 12 groups of agricultural products: food grains, feed grains, sugar crops, fruits and tree nuts, vegetables and miscellaneous crops, oil crops, cotton, tobacco, dairy products and honey, meat animals, poultry and eggs, and mohair and shorn wool. These indexes were taken from "Volume of Production of Crops and of Livestock Products for Sale and for Home Consumption, 1910-46," The Farm Income Situation, U.S. Department of Agriculture FIS-83, December 1946.

For years prior to 1909, the production series used for extrapolation purposes were taken from "Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937," by Frederick Strauss and Louis H. Bean, U.S. Department of Agriculture, *Technical Bulletin No. 703*, December 1940.

Imports, Exports, and Consumption Series.--The agricultural imports and exports were compiled primarily by the AMS to measure the supply and utilization of farm commodities. The basic source of these figures is the Bureau of the Census import and export data. The AMS imports and exports were supplemented by import figures for rubber, silk, vegetable fibers, and spices not covered by AMS and by certain imports and exports of cattle and hogs.

For years prior to 1924, Bureau of the Census quantity series for imports and exports of commodities which are components of the AMS groups used for later years were combined to the AMS group level by use of unit value weights. These subgroup series were used to extrapolate figures for each AMS group from the 1924 figures. In a few cases the available series represented nearly complete coverage of the commodity group, but in most cases the coverage was considerably less, particularly for nonfood commodities.

FISHERY AND WILDLIFE PRODUCTS

Fishery Series.--The series for production of fishery items is based on data provided by the Fish and Wildlife Service of the U.S. Department of the Interior. The data represent the quantities of approximately 200 varieties of both fresh- and salt-water fish and shellfish caught by commercial fishermen of continental United States and Alaska. In addition to the various kinds of fish, other marine products included are sponges, shells, seaweed, and the like. The quantities of the various marine products were weighted by their average 1935-1939 and 1954 prices, respectively. The Fish and Wildlife Service considers that the production data for the period after 1930 represent 97 or 98 percent of the total dollar value of production of fishery products. Coverage in the period prior to 1930 is much more uncertain because of the lack, except for the year 1908, of good benchmark data. The production series for this early period contains many estimates, the figures for some years being entirely estimated by means of straight-line interpolation between benchmarks.

For the years 1924-1961, the foreign-trade series for fishery products, in constant 1935-1939 and 1954 dollars, were assembled by the Fish and Wildlife Service. For prior years, the President's Materials Policy Commission staff compiled figures showing the values of fish imports and exports, based on U.S. Department of Commerce records. These values were then deflated, by means of indexes of fish prices, to obtain estimates of the quantities imported and exported. Data measuring the foreign trade in fishery products represent essentially complete coverage in terms of value of the items imported and exported, and the errors introduced in converting to quantities measured in 1935-1939 and 1954 dollars are believed to be small.

Wildlife Products.--Wildlife products are represented by furs which constitute the major portion of this classification. Relatively incomplete production data are available on furs, however, particularly for the early years. For this reason, the production measures for manufactures census years were computed from fairly reliable consumption, imports, and exports figures which could be developed from census statistics. Incomplete coverage series on the number of wild animals trapped were then used to interpolate between and extrapolate beyond these benchmark figures for the later years, and straight-line interpolation of consumption was accepted for early years.

For all census years in the period 1899-1958, consumption figures in current dollars were obtained as the cost of furs bought by the fur goods industry and by the fur dressing and dyeing industry, plus exports of domestic dressed furs, less shipments of dressed furs by the fur dressing and dyeing industry. These aggregate values for fur consumption were reduced to constant 1935-1939 and 1954 dollars by use of a price index based in part on imports and exports of furs for the United States and in part on a Canadian fur price index. Figures for consumption in intercensal years prior to 1935 were estimated by straight-line interpolation. From this consumption series for census years and years prior to 1935, the production series was estimated by adding exports and subtracting imports.

For 1935-1961, fur production series were developed from figures for the number of wild animals trapped, as reported by the Fish and Wildlife Service. For 1954-1961, the series used for interpolating between the 1954 and 1958 census figures and for extrapolating beyond the 1958 census represented data for 42 States, Alaska, and the Pribilof Islands, covering 19 types of wild animals caught for the figures in 1954 dollars and 18 types of animals for the figures in 1935-1939 dollars. The series used for interpolation for the period 1947-1954 represented 22 States, Alaska, and the Pribilof Islands, and for 1935-1947, 24 States, Alaska, and the Pribilof Islands, and covered 12 types of wild animals caught for the entire period 1935-1954. The sample used for the period after 1954 covered about 21 percent of the estimated total value of fur production in 1954, 16 percent in 1958, and 17 percent in 1961. The sample used for 1947-1954 represented about 36 percent coverage in 1947 and about 15 percent in 1954. In developing these annual series, the quantities for different types of furs produced were weighted by the 1935-1939 and 1954 average unit values of furs exported, wherever such data were available, and by 1935-1939 and 1954 average unit import values where export data were not available.

For the period 1935-1961, the import and export series were developed by multiplying the quantity figures for the different types of furs imported and exported by their respective 1935-1939 and 1954 average unit values. For years prior to 1935, the fur import and export quantities were obtained by deflating the corresponding total values by related price indexes. The foreign-trade data represent essentially complete coverage of raw furs, and adjustments were made for the period based on value data to represent raw furs for which quantity was not available and the raw fur equivalent of dressed furs.

FOREST PRODUCTS

The series for forest products is based on statistics compiled by the Forest Service and the Bureau of the Census. Forest products classes were combined into three major groups: sawlogs, pulpwood, and other forest products. The other forest products series included: veneer logs, fuelwood (roundwood), other (except naval stores), turpentine, and rosin. These seven product classes, measured in physical quantity units were combined by means of unit value weights. The 1954 unit values of forest products at first point of market were supplied by the Forest Service, or for naval stores taken from AMS reports. These were converted to 1935-1939 equivalents by means of related Bureau of the Census, Bureau of Labor Statistics, and Department of Agriculture series. The quantity of production, imports, and exports series used were as compiled by the Forest Service and AMS, of the Department of Agriculture, although the basic import and export series, and part of the production series were collected by the Bureau of the Census.

The production series represent about 99 percent of the total value of forest products from continental United States and Alaska. The major item not included is Christmas trees. (Maple syrup and maple sugar are covered in the agricultural production series rather than in forest products.) Other minor forest products excluded are tanbark, holly, mistletoe, ferns, wild nuts, and balsam.

The import and export series, which represent nearly as high a coverage of the total value of foreign trade in forest products, include the pulpwood equivalent of processed products, such as wood pulp, paper, and paperboard products, and such products as shingles and cork.

For the consumption series in terms of broad use classes, the Forest Service provided not only the series for roundwood fuelwood which is a part of the other forest products group, but also a new series of estimates for residue fuelwood which is implicitly included in the sawlogs series, as well as appropriate 1954 unit value weights for each of these series based on sample market values of such products in various States.

MINERALS

Production Series.--The mineral production series includes 76 mineral products, which correspond to over 99 percent of the total value of mineral output as reported in the 1939 and 1954 Censuses of Mineral Industries and to about 98.5 percent of the total value of mineral output as indicated in the 1958 minerals census. The most significant omission in later years was uranium ores. Comparable measures of coverage cannot be made for other years. However, an analysis of production information available for the few mineral items omitted indicates that coverage was not significantly lower for such years.

In constructing the PMPC production measures, extensive use was made of Dr. Y. S. Leong's worksheets for construction of his index of mineral production. The production series for 61 mineral products were taken from these worksheets for all or part of the period 1900-1948 and most of the comparable 1949 and 1950 figures were also supplied by Dr. Leong. In cases where a mineral first appeared in the Leong index for a year later than 1900, its output for earlier years of the half century was estimated from related data.

The basic source for these and all other annual mineral production figures used was from the Bureau of Mines, primarily as published in its Minerals Yearbook (prior to 1932, Mineral Resources of the United States). However, most of the 1954 and part of the 1939 unit values used as weights represent Bureau of the Census figures. The 1939 figures were adjusted to a 1935-1939 level on the basis of figures as published in the Minerals Yearbooks. These are based primarily on producers reports to the Bureau of Mines, but partly on various other source material. In general, the Census and Bureau of Mines figures are closely comparable, but the census data more uniformly provide unit values at producing operations.

The minerals included in the production measures are:

Iron and ferroalloy ores
(Measured in terms of metal contained)

Iron
Manganese
Tungsten
Chromium
Cobalt
Molybdenum
Nickel

Other metal ores
(In general, measured in terms of metal contained)

Gold
Silver
Copper
Lead
Zinc
Bauxite
Mercury
Antimony
Cadmium
Magnesium
Platinum-group metals
Tin
Titanium

Mineral fuels

Anthracite
Bituminous coal and lignite
Crude petroleum
Natural gas
Natural gasoline
Liquefied petroleum gases

Mineral construction materials

- Dimension stone:
  - Limestone
  - Granite
  - Slate
  - Marble
  - Trap rock
  - Sandstone
  - Miscellaneous stone

- Crushed and broken stone:
  - For cement manufacture
  - For lime manufacture
- Crushed and broken stone--Continued
  - Slate
  - All other stone

- Sand and gravel
- Fire clay
- Magnesite
- Common clay and shale
- Gypsum
- Native asphalt and bitumens
- Asbestos
- Perlite

Chemical and fertilizer minerals

Barite
Fluorspar
Potash
Borates
Phosphate rock
Sodium chloride
Sulfur and pyrites
Arsenious oxide
Bromine
Calcium-magnesium chloride
Magnesium compounds
Sodium carbonate
Sodium sulfate
Iodine

Abrasives and miscellaneous minerals

Fuller's earth
High-grade clay
Feldspar
Mica sheet
Mica scrap
Pumice and pumicite
Talc and soapstone
Emery and garnet
Grinding pebbles and tube-mill liners
Grindstones and pulpstones
Quartz, ground sand, and sandstone for abrasive purposes
Tripoli and rottenstone
Peat
Diatomite
Graphite
Greensand
Vermiculite

Secondary Production.--The basic series presented throughout this report represent primary production only. For the purpose of measuring overall raw materials requirements, this is the preferred measure. Moreover, for most raw materials, adequate data are not available to construct annual series for secondary production. However, there are more adequate data for nonferrous metals, and series for secondary production of such metals have been compiled and are presented in table A12 for the period 1910-1961. This table also reproduces the primary production series which are included in table A11 and elsewhere, and shows the combined total of primary and secondary production of these commodities. The unit value weights used in constructing these series for secondary metals are the same as those used for primary metals.

Imports, Exports, and Consumption Series.--Many of the foreign-trade quantity figures used for minerals for 1900-1950 were compiled especially for PMPC by the Bureau of Mines staff, based, however, on census data for imports and exports. These figures were supplemented for the same period by foreign-trade figures for chemicals and selected other commodities compiled for PMPC by the Office of International Trade, U. S. Department of Commerce, and also supplemented for this period, and supplied for all commodities in later years, by figures compiled directly from census data. Where reported quantity data were lacking, the series were completed by estimates based on reported value data, on values for groups of commodities in which an item was included, or occasionally on the movement of related items. These estimates amounted to 2 percent or less of the constant-dollar value of the combined production, imports, and exports of all minerals in any year, and less than 1 percent in the later years. However, the estimates amounted to 3 to 6 percent of the totals for "other metals," "construction materials," and "other nonmetallic minerals" in the period 1900-1920.

The figures for imports and exports were weighted by the same 1935-1939 and 1954 unit values at the mine as were used in weighting the production series, insofar as the items were produced domestically. In general, the 1935-1939 and 1954 average unit values of imports were used as weights for minerals not produced in the United States.

In addition to the 76 mineral products included in the production series, the mineral imports and consumption series include the following materials, for the chemical and fertilizer minerals series: Radium salts, cryolite, and guano; and for the abrasives and miscellaneous minerals series: Chalk, corundum, diamonds (3 series: cut but not set, rough and uncut, and industrial), and emeralds.

For imports or exports of semiprocessed or processed items, the major raw materials contained were estimated. Thus, the mineral equivalents of the foreign-trade statistics for paints, other chemicals, and machinery were computed and added to the figures for the crude minerals. For example, an import of aluminum sulfate was represented by additions to the bauxite and sulfur series. Many of these conversions were made by the Bureau of Mines staff and many others by the PMPC staff for the period 1900-1950 and comparable conversions were made by the Bureau of the Census for later years.

Iron-ore Equivalent of Machinery and Vehicles.--The following methods were employed to obtain the iron-ore equivalent of machinery-and-vehicles exports and imports. The series were based largely on 1943-1944 data published by the Bureau of the Census showing the gross shipping weight of these items. In order to reduce these gross-weight figures to net weight, excluding the weight of containers, estimates of the ratio of net to gross weight for specific groups of items were obtained from various Government agencies and private manufacturing firms. The iron content of items in the principal machinery and vehicles subgroups was estimated on the basis of statistics for iron and steel consumed by each industry, as published in the 1947, 1954, and 1958 Census of Manufactures reports, supplemented by unpublished Census statistics on value of specific materials consumed in manufacturing plants. Some data on materials contents were also obtained from private firms.

The 1943-1944 figures for iron content of machinery-and-vehicles exports and imports were carried back to earlier years and forward to 1961 in several segments: (1) Iron content of exports by vessel were based on indexes constructed from data collected by the Chief of Engineers of the U. S. Army for annual tonnages of types of machinery and vehicles shipped by vessel for the years 1920 through 1946. The 1947-1961 figures were based on census data. (2) Shipments by rail and truck were derived for 1920-1961 by deflating the total value of exports of machinery and vehicles to Canada and Mexico by an index of the average price of machinery and vehicles. (3) Shipments by air and all other means, largely merchant vessels and aircraft exported under their own power, were extrapolated by an index of the total light displacement weight of merchant-vessel exports available for the period 1938-1961. This type of export was negligible prior to 1938. (4) Exports for years prior to 1920 were extrapolated by deflating the total value of machinery and vehicles exported by a price index. (5) For imports, separate series were developed for Canadian and non-Canadian items, making use of Census figures for the value per ton of waterborne imports.

The iron content of machinery and vehicles exported, as thus estimated, proved to be substantial. It amounted to about 5.5 million tons at the peak volume of merchant-vessel exports in 1947. In 1950, it was about 2.1 million tons, or a little over 4 percent of the U. S. production of iron, and in 1961, 2.4 million tons, nearly 7 percent of U. S. production. The iron-ore equivalent of machinery-and-vehicles imports amounted to less than 3 percent of exports in 1950, but had risen to about 20 percent in 1961.

RAW MATERIALS CONSUMPTION, BY END USE

As discussed in Chapter 5, the raw-materials series have been regrouped in terms of the major purposes for which the materials are used (see table A5). This classification represents materials use in the entire U. S. economy, including the raw-materials industries.

It should be noted that the relative importance of the foods, energy materials, and physical-structure materials segments of the consumption pattern is somewhat influenced by the consumption of raw materials within the raw-materials industries, although such duplication is considerably less than in the series included in the PMPC report and in Working Paper Number 1. The value of purchased feed for farm animals and seed were included in the earlier reports but are excluded here. However, the mineral fuels consumed in producing raw materials are included, as well as the indirect consumption of raw materials represented by the capital-goods requirements of the raw-materials industries. Available staff facilities did not permit extensive analysis of the magnitude of consumption of raw materials within the raw-materials industries. Statistics in Chapter 5, however, indicate that 4 to 7 percent of all energy has been used in mineral-fuel production.

FURTHER REFINEMENTS

In general, the raw-materials measures are unadjusted for changes in quality of the specified materials. In the case of agricultural products, this probably introduced a slight downward bias, since the quality of these products, as marketed, has probably increased. For minerals and forest products, the bias is probably upward, reflecting depletion of the richest mineral deposits and most valuable stands of virgin forests.

As an indication of the effect which quality changes can have on the production series, the constant-dollar aggregates for crude petroleum were recomputed to adjust for the change from principally Pennsylvania-grade crude to other types of crude over the half century. Prior to the 1950's the unit value of Pennsylvania-grade crude was approximately twice as high as the average for all other crudes. For the 1935-1939 base period, the average value per barrel of Pennsylvania-grade crudes was $2.09, as compared with $1.06 for all other crudes. Production aggregates were constructed, weighting these two broad grades of crudes separately. These figures yielded value aggregates almost twice as high in early years as the aggregates unadjusted for change in quality:

Year	Crude petroleum production aggregates (measured in millions of constant 1935-1939 dollars)	
	Unadjusted for quality changes	Adjusted for quality changes
1950	2,127.5	2,113.2
1925	823.3	833.1
1900	68.6	122.1

Although the percent increase in production between 1900 and 1950 indicated for the unadjusted series was nearly twice as much as for the quality adjusted series, the effect on value aggregates was very small for later years when quite significant quantities of crude oil were produced.

For many minerals the quality changes have been compensated for by concentration or other preparation of the crude materials before they are measured as marketable mineral products. Such changes in grade of crude materials mined would not affect the production measures presented in this report. Moreover, for some series, such as iron ore and major nonferrous-metal ores, the series measures are in terms of recoverable metals contained in the ores and, hence, are unaffected by changes in grades of ores marketed.

Table A1.--Raw Materials Production in the United States in

(All production figures

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	47,743	47,690	29,193	11,739	17,454	446	341	105
1960	48,242	48,184	29,728	12,733	16,995	450	338	112
1959	46,369	46,313	28,219	11,564	16,655	442	337	105
1958	45,534	45,473	28,206	12,192	16,014	454	344	110
1957	45,862	45,800	27,242	10,829	16,413	460	343	117
1956	46,515	46,452	27,653	10,882	16,771	463	363	100
1955	44,818	44,753	26,899	10,965	15,934	438	340	98
1954	42,502	42,438	26,087	10,686	15,401	454	356	98
1953	42,826	42,758	25,819	10,680	15,139	451	341	110
1952	41,921	41,855	25,226	10,740	14,486	450	351	99
1951	40,508	40,439	23,645	9,626	14,019	439	349	90
1950	38,862	38,779	23,383	9,381	14,002	421	361	60
1949	38,045	37,976	24,052	10,322	13,730	447	372	75
1948	40,860	40,790	25,130	11,823	13,307	433	348	85
1947	38,415	38.342	23,301	9,028	14,273	437	350	87
1946	37,211	37,156	23,484	9,290	14,194	440	343	97
1945	36,518	36,485	22,949	8,402	14,547	420	344	76
1944	38,012	37,977	23,885	8,806	15,079	387	313	74
1943	34,933	34,886	21,210	6,765	14,445	374	300	74
1942	35,787	35,666	22,226	9,033	13,193	355	291	64
1941	33,289	33,124	20,149	8,268	11,881	402	332	70
1940	31,485	31,315	19,459	8,010	11,449	391	316	75
1939	29,507	29,344	18,517	7,752	10,765	385	326	59
1938	28,731	28,582	18,752	8,451	10,301	392	328	64
1937	31,481	31,338	20,071	10,098	9,973	403	338	65
1936	26,034	25,903	15,646	5,397	10,249	405	348	57
1935	26,243	26,130	17,273	7,949	9,324	345	300	45
1934	23,912	23,815	15,576	4,752	10,824	345	303	42
1933	24,189	24,108	16,365	5,879	10,486	282	242	40
1932	24,605	24,524	17,451	7,343	10,108	294	229	65
1931	27,199	27,122	18,629	8,478	10,151	317	254	63
1930	27,624	27,549	17,407	7,412	9,995	366	287	79
1929	29,008	28,937	17,401	7,514	9,887	348	302	46
1928	28,363	28,289	17,587	7,739	9,848	320	280	40
1927	28,052	27,979	17,173	7,325	9,848	326	278	48
1926	28,765	28,687	17,894	8,025	9,869	317	274	43
1925	27,407	27,327	17,077	7,345	9,732	285	245	40
1924	27,200	27,115	17,170	7,179	9,991	282	250	32
1923	27,081	26,998	16,484	6,678	9,806	249	215	34
1922	24,348	24,268	15,927	6,717	9,210	281	231	50
1921	22,104	22,022	14,307	5,729	8,578	256	219	37
1920	25,424	25,341	16,066	7,454	8,612	286	254	32
1919	24,514	24,418	16,002	6,831	9,171	288	261	27
1918	24,483	24,371	15,153	7,070	8,083	299	266	33
1917	24,543	24,407	15,080	6,614	8,466	302	269	33
1916	23,707	23,553	14,468	6,022	8,446	296	265	31
1915	23,483	23,318	15,109	6,919	8,190	283	254	29
1914	23,599	23,445	15,376	7,526	7,850	315	249	66
1913	23,347	23,197	14,574	6,544	8,030	306	236	70
1912	23,528	23,373	15,077	7,057	8,020	287	224	63
1911	22,834	22,671	14,721	6,571	8,150	274	225	49
1910	22,070	21,911	13,866	6,118	7,748	280	224	56
1909	21,532	21,365	13,850	6,043	7,807	282	222	60
1908	21,574	21,419	14,291	6,331	7,960	284	223	61
1907	21,644	21,497	13,790	6,044	7,746	274	225	49
1906	21,687	21,524	14,381	6,778	7,603	272	226	46
1905	20,626	20,478	13,599	6,085	7,514	273	226	47
1904	20,121	19,985	13,553	6,291	7,262	271	227	44
1903	19,439	19,315	12,948	5,835	7,113	276	223	53
1902	18,632	18,497	12,632	5,958	6,674	260	222	38
1901	18,452	18,319	12,607	5,636	6,971	263	220	43
1900	18,067	17,934	12,462	5,667	6,795	266	212	54

Constant 1954 Dollars, by Broad Product Groups: 1900-1961

in millions of dollars)

Forest products				Minerals								Year
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	
							Total	Total, except gold				
2,659	1,376	487	796	15,445	15,392	621	771	718	11,451	1,773	829	1961
2,692	1,422	490	780	15,372	15,314	780	733	675	11,325	1,734	800	1960
2,868	1,609	457	802	14,840	14,784	552	610	554	11,207	1,704	767	1959
2,586	1,445	418	723	14,288	14,227	605	685	624	10,704	1,594	700	1958
2,609	1,428	460	721	15,551	15,489	895	803	741	11,549	1,546	758	1957
2,889	1,658	484	747	15,510	15,447	861	805	742	11,551	1,498	795	1956
2,793	1,620	431	742	14,688	14,623	898	745	680	10,905	1,417	723	1955
2,659	1,582	378	699	13,302	13,238	691	668	604	9,993	1,271	679	1954
2,701	1,599	379	723	13,855	13,787	947	735	667	10,366	1,155	652	1953
2,712	1,630	362	720	13,533	13,467	775	767	701	10,233	1,137	621	1952
2,747	1,618	366	763	13,677	13,608	900	735	666	10,346	1,089	607	1951
2,714	1,653	300	761	12,344	12,261	740	730	647	9,342	984	548	1950
2,482	1,402	258	822	11,064	10,995	642	625	556	8,459	859	479	1949
2,723	1,613	298	812	12,574	12,504	760	669	599	9,762	880	503	1948
2,648	1,544	277	827	12,029	11,956	712	675	602	9,357	800	485	1947
2,532	1,485	255	792	10,754	10,699	561	515	460	8,523	698	457	1946
2,266	1,225	230	811	10,883	10,850	718	606	573	8,595	552	412	1945
2,487	1,435	234	818	11,253	11,218	784	805	770	8,711	547	406	1944
2,514	1,494	207	813	10,835	10,788	876	932	885	8,012	629	386	1943
2,673	1,582	228	863	10,533	10,412	888	915	794	7,596	765	369	1942
2,773	1,592	217	964	9,965	9,800	749	870	705	7,260	743	343	1941
2,531	1,358	190	983	9,104	8,934	599	819	649	6,789	619	278	1940
2,426	1,253	150	1,023	8,179	8,016	427	712	549	6,204	601	235	1939
2,243	1,082	122	1,039	7,344	7,195	247	602	453	5,781	494	220	1938
2,423	1,263	137	1,023	8,584	8,441	572	765	622	6,458	535	254	1937
2,340	1,204	116	1,020	7,643	7,512	388	616	485	5,905	515	219	1936
2,128	999	101	1,028	6,497	6,384	247	465	352	5,254	349	182	1935
1,970	820	92	1,058	6,021	5,924	194	352	255	4,965	349	161	1934
1,921	747	92	1,082	5,621	5,540	133	293	212	4,742	302	151	1933
1,730	589	75	1,066	5,130	5,049	75	307	226	4,309	327	112	1932
1,971	870	92	1,009	6,282	6,205	233	480	403	4,942	452	175	1931
2,373	1,278	94	1,001	7,478	7,403	429	628	553	5,602	604	215	1930
2,759	1,687	99	973	8,500	8,429	537	801	730	6,249	697	216	1929
2,651	1,600	89	962	7,805	7,731	460	751	677	5,739	658	197	1928
2,688	1,623	85	980	7,865	7,792	466	724	651	5,830	656	189	1927
2,755	1,732	85	938	7,799	7,721	511	758	680	5,725	619	186	1926
2,815	1,787	77	951	7,230	7,150	474	745	665	5,237	601	173	1925
2,801	1,721	73	1,007	6,947	6,862	403	704	619	5,137	547	156	1924
2,881	1,787	71	1,023	7,467	7,384	517	667	584	5,580	524	179	1923
2,665	1,537	69	1,059	5,475	5,395	347	508	428	4,065	402	153	1922
2,449	1,263	58	1,128	5,092	5,010	205	346	264	4,091	329	121	1921
2,739	1,525	77	1,137	6,333	6,250	503	587	504	4,710	367	166	1920
2,712	1,504	68	1,140	5,512	5,416	442	575	479	4,141	317	137	1919
2,622	1,388	69	1,165	6,409	6,297	575	803	691	4,581	290	160	1918
2,779	1,560	72	1,147	6,382	6,246	590	850	714	4,408	382	152	1917
2,951	1,733	68	1,150	5,992	5,838	567	890	736	3,971	442	122	1916
2,802	1,611	63	1,128	5,289	5,124	403	752	587	3,638	398	98	1915
2,959	1,762	56	1,141	4,949	4,795	294	632	478	3,515	417	91	1914
3,115	1,915	55	1,145	5,352	5,202	438	644	494	3,725	444	101	1913
3,163	1,958	54	1,151	5,001	4,846	392	636	481	3,460	423	90	1912
3,106	1,871	52	1,183	4,733	4,570	314	599	436	3,298	437	85	1911
3,158	1,935	48	1,175	4,766	4,607	411	576	417	3,267	430	82	1910
3,134	1,935	49	1,150	4,266	4,099	373	590	423	2,808	417	78	1909
3,027	1,826	41	1,160	3,972	3,817	261	515	360	2,773	352	71	1908
3,214	2,001	47	1,166	4,366	4,219	379	494	347	3,043	373	77	1907
3,140	2,001	45	1,094	3,894	3,731	347	530	367	2,571	370	76	1906
3,002	1,892	39	1,071	3,752	3,604	311	503	355	2,518	351	69	1905
2,987	1,869	38	1,080	3,310	3,174	202	471	335	2,260	317	60	1904
2,927	1,805	35	1,087	3,288	3,164	255	423	299	2,243	314	53	1903
2,864	1,731	32	1,101	2,876	2,741	260	423	288	1,820	321	52	1902
2,808	1,661	30	1,117	2,774	2,641	214	402	269	1,832	274	52	1901
2,753	1,591	27	1,135	2,586	2,453	204	403	270	1,664	265	50	1900

Table A2.--Raw Materials Imports Into the United States in

(All import figures in

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	10,302	10,253	5,678	4,763	915	479	378	101
1960	10,360	10,036	5,490	4,698	792	423	344	79
1959	10,449	10,154	5,658	4,705	953	434	357	77
1958	9,488	9,206	4,926	4,143	783	375	304	71
1957	9,697	9,429	4,900	4,303	597	368	291	77
1956	9,370	9,240	4,918	4,361	557	350	277	73
1955	8,746	8,644	4,726	4,151	575	336	262	74
1954	7,869	7,831	4,316	3,854	462	319	252	67
1953	8,691	8,644	5,002	4,431	571	305	237	68
1952	9,009	8,274	4,920	4,242	678	308	234	74
1951	7,908	7,827	4,880	4,201	679	293	206	87
1950	8,225	8,063	4,871	4,076	795	295	196	99
1949	8,072	7,305	4,756	4,260	496	277	173	104
1948	9,147	7,226	4,841	4,074	767	267	149	118
1947	8,271	6,344	4,353	3,864	489	224	125	99
1946	6,827	6,447	4,580	3,789	791	289	143	146
1945	6,489	6,396	4,372	3,737	635	231	129	102
1944	6,502	6,402	4,535	3,971	564	214	115	99
1943	5,817	5,716	3,890	3,276	614	187	99	88
1942	5,330	5,016	3,219	2,467	752	146	68	78
1941	8,127	7,151	4,901	4,038	863	238	113	125
1940	10,138	5,934	4,218	3,651	567	247	133	114
1939	8,919	5,369	4,073	3,506	567	239	155	84
1938	6,820	4,868	3,726	3,324	402	199	138	61
1937	7,471	5,850	4,384	3,764	620	262	170	92
1936	6,617	5,482	4,089	3,497	592	264	157	107
1935	7,085	5,444	3,986	3,465	521	237	136	101
1934	5,284	4,109	3,148	2,817	331	187	126	61
1933	4,582	4,261	3,315	2,881	434	196	122	74
1932	4,267	3,805	3,052	2,714	338	183	122	61
1931	4,980	4,633	3,517	3,066	451	224	142	82
1930	4,987	4,852	3,633	3,124	509	204	133	71
1929	5,917	5,610	4,028	3,262	766	264	163	101
1928	5,264	5,063	3,635	2,941	694	236	142	94
1927	5,092	4,911	3,630	2,965	665	199	137	62
1926	5,203	5,046	3,668	3,065	603	191	133	58
1925	4,927	4,723	3,413	2,825	588	239	181	58
1924	4,890	4,513	3,203	2,711	492	232	161	71
1923	5,003	4,646	3,344	2,750	594	212	146	66
1922	4,805	4,459	3,157	2,576	581	187	149	38
1921	4,757	3,852	2,841	2,325	516	187	153	34
1920	4,841	4,249	3,012	2,412	600	202	160	42
1919	4,215	4,131	3,066	2,349	717	218	180	38
1918	3,754	3,660	2,682	1,975	707	178	147	31
1917	5,202	3,774	2,801	2,224	577	206	160	46
1916	3,795	3,532	2,619	2,035	584	217	167	50
1915	3,419	3,337	2,597	1,927	670	220	164	56
1914	3,368	3,306	2,592	1,879	713	207	178	29
1913	3,117	3,028	2,242	1,781	461	196	161	35
1912	2,948	2,885	2,166	1,764	402	175	135	40
1911	2,750	2,653	1,953	1,652	301	186	138	48
1910	2,658	2,594	1,896	1,578	318	186	135	51
1909	2,887	2,826	2,200	1,813	387	163	121	42
1908	2,375	2,219	1,711	1,473	238	137	108	29
1907	2,465	2,376	1,826	1,581	245	142	103	39
1906	2,462	2,368	1,794	1,544	250	149	103	46
1905	2,354	2,299	1,785	1,474	311	150	106	44
1904	2,347	2,265	1,812	1,570	242	139	95	44
1903	2,229	2,178	1,683	1,469	214	131	90	41
1902	2,274	2,214	1,717	1,498	219	135	81	54
1901	2,144	2,079	1,584	1,395	189	126	81	45
1900	1,888	1,865	1,434	1,184	250	110	73	37

Constant 1954 Dollars, by Broad Product Groups: 1900-1961

millions of dollars)

Forest products				Minerals								
							Other metals					
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Total	Total, except gold	Mineral fuels	Construction materials	Other non-metallic minerals	Year
449	186	205	58	3,696	3,647	686	782	733	1,947	82	199	1961
429	171	204	54	4,018	3,694	713	1,109	785	1,902	90	204	1960
445	178	200	67	3,912	3,617	777	1,042	747	1,777	96	220	1959
383	148	185	50	3,804	3,522	614	1,104	822	1,825	80	181	1958
374	129	197	48	4,055	3,787	876	1,245	977	1,634	92	208	1957
406	150	214	42	3,696	3,566	838	1,066	936	1,508	87	197	1956
404	157	200	47	3,280	3,178	761	948	846	1,303	90	178	1955
361	134	186	41	2,873	2,835	675	887	849	1,087	79	145	1954
345	121	188	36	3,039	2,992	759	971	924	1,064	79	166	1953
331	108	193	30	3,450	2,715	583	1,646	911	981	80	160	1952
356	110	210	36	2,379	2,298	522	704	623	866	88	199	1951
379	150	196	33	2,680	2,518	516	1,028	866	865	81	190	1950
264	69	170	25	2,775	2,008	405	1,507	740	670	59	134	1949
300	82	189	29	3,739	1,818	430	2,558	637	530	73	148	1948
264	57	179	28	3,430	1,503	352	2,455	528	457	66	100	1947
234	54	154	26	1,724	1,344	338	812	432	405	50	119	1946
204	46	132	26	1,682	1,589	330	821	728	373	39	119	1945
171	43	108	20	1,582	1,482	382	761	661	288	39	112	1944
169	37	118	14	1,571	1,470	412	765	664	190	44	160	1943
217	67	131	19	1,748	1,434	391	1,071	757	116	42	128	1942
222	59	131	32	2,766	1,790	395	1,930	954	283	46	112	1941
175	32	114	29	5,498	1,294	310	4,839	635	239	30	80	1940
183	31	129	23	4,424	874	190	3,965	415	177	29	63	1939
155	23	116	16	2,740	788	124	2,389	437	156	22	49	1938
219	30	161	28	2,606	985	228	2,080	459	170	35	93	1937
192	29	142	21	2,072	937	201	1,610	475	170	27	64	1936
160	19	123	18	2,702	1,061	123	2,348	707	160	19	52	1935
135	13	110	12	1,814	639	92	1,520	345	148	14	40	1934
136	16	103	17	935	614	81	673	352	132	14	35	1933
120	17	91	12	912	450	38	626	164	214	9	25	1932
149	33	101	15	1,090	743	79	706	359	247	17	41	1931
189	53	118	18	961	826	141	434	299	302	28	56	1930
219	67	124	28	1,406	1,099	195	788	481	311	35	77	1929
205	64	117	24	1,188	987	146	695	494	254	30	63	1928
209	76	109	24	1,054	873	133	629	448	206	30	56	1927
222	83	108	31	1,122	965	142	635	478	239	34	72	1926
199	81	94	24	1,076	872	131	632	428	226	29	58	1925
187	76	89	22	1,268	891	101	815	438	268	24	60	1924
197	86	87	24	1,250	893	93	780	423	290	26	61	1923
166	68	75	23	1,295	949	86	742	396	404	19	44	1922
100	37	49	14	1,629	724	54	1,175	270	363	11	26	1921
137	59	58	20	1,490	898	127	981	390	308	21	53	1920
112	50	45	17	819	735	127	476	392	156	16	44	1919
106	53	39	14	788	694	158	472	378	115	15	28	1918
109	53	39	17	2,086	658	147	1,788	360	95	15	41	1917
108	53	39	16	851	588	134	591	328	66	13	47	1916
95	46	36	13	507	425	87	309	227	62	11	38	1915
94	40	36	18	475	413	79	284	222	53	13	46	1914
86	42	33	11	593	504	113	365	276	43	14	58	1913
86	45	32	9	521	458	83	347	284	25	12	54	1912
78	37	30	11	533	436	72	384	287	13	11	53	1911
79	41	28	10	497	433	85	334	270	13	10	55	1910
73	43	22	8	451	390	61	324	263	9	10	47	1909
58	34	17	7	469	313	50	371	215	10	8	30	1908
68	39	22	7	429	340	64	297	208	13	10	45	1907
67	44	17	6	452	358	69	310	216	11	8	54	1906
55	35	14	6	364	309	59	246	191	11	7	41	1905
47	27	14	6	348	267	34	261	180	10	7	36	1904
46	28	12	6	369	318	73	227	176	20	7	42	1903
50	32	12	6	372	312	72	234	174	16	6	44	1902
42	26	10	6	392	327	100	235	170	11	6	40	1901
36	23	8	5	308	285	77	181	158	11	5	34	1900

Table A3.--Raw Materials Exports From the United States in

(All export figures in

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	7,176	6,394	5,052	4,412	640	76	33	43
1960	6,296	6,294	4,949	4,360	589	75	42	33
1959	4,922	4,920	3,907	3,322	585	74	43	31
1958	4,840	4,809	3,669	3,127	542	58	29	29
1957	6,256	6,089	4,361	3,730	631	67	35	32
1956	5,410	5,384	3,912	3,177	735	61	39	22
1955	4,214	4,208	2,975	2,296	679	62	41	21
1954	3,824	3,807	2,757	2,291	466	52	32	20
1953	3,446	3,416	2,459	2,047	412	45	27	18
1952	3,919	3,892	2,773	2,441	332	38	21	17
1951	5,011	4,401	3,246	2,798	448	51	35	16
1950	4,032	3,523	2,684	2,274	410	42	27	15
1949	3,601	3,526	2,610	2,266	344	54	40	14
1948	3,342	3,160	2,105	1,821	284	36	23	13
1947	4,359	4,176	2,727	2,216	511	80	60	20
1946	4,303	4,084	3,022	2,103	919	58	44	14
1945	3,639	3,442	2,347	1,482	865	57	49	8
1944	4,377	3,424	2,142	890	1,252	55	53	2
1943	3,396	3,372	2,257	979	1,278	72	71	1
1942	2,371	2,370	1,455	656	799	57	54	3
1941	2,012	2,012	1,150	764	386	64	61	3
1940	2,322	2,321	1,238	1,084	154	71	57	14
1939	2,779	2,779	1,611	1,461	150	63	48	15
1938	2,948	2,942	1,828	1,700	128	69	51	18
1937	2,772	2,726	1,612	1,509	103	63	49	14
1936	2,310	2,283	1,433	1,330	103	67	50	17
1935	2,372	2,370	1,516	1,404	112	75	54	21
1934	2,485	2,430	1,609	1,420	189	74	56	18
1933	3,300	2,719	2,023	1,834	189	52	33	19
1932	4,067	2,865	2,225	2,049	176	48	32	16
1931	3,601	2,950	2,092	1,880	212	57	38	19
1930	3,415	3,287	2,159	1,896	263	67	45	22
1929	4,039	3,855	2,528	2,213	315	77	59	18
1928	4,746	4,044	2,731	2,429	302	70	51	19
1927	4,250	4,157	2,923	2,623	300	62	46	16
1926	3,974	3,958	2,715	2,382	333	66	54	12
1925	3,980	3,802	2,665	2,270	395	93	78	15
1924	3,939	3,893	2,718	2,223	495	89	72	17
1923	3,410	3,377	2,365	1,778	587	72	59	13
1922	3,598	3,588	2,790	2,302	488	78	65	13
1921	3,977	3,971	3,214	2,642	572	66	57	9
1920	3,929	3,863	2,871	2,249	622	107	91	16
1919	4,765	4,560	3,578	2,448	1,130	161	150	11
1918	3,941	3,927	2,877	1,639	1,238	117	109	8
1917	3,551	3,375	2,274	1,525	749	105	87	18
1916	4,044	4,016	3,036	2,255	781	124	99	25
1915	4,309	4,277	3,433	2,638	795	110	97	13
1914	3,233	3,159	2,312	2,014	298	86	60	26
1913	3,548	3,476	2,494	2,198	296	104	70	34
1912	3,584	3,539	2,659	2,358	301	79	48	31
1911	3,162	3,160	2,314	1,953	361	67	42	25
1910	2,636	2,588	1,850	1,584	266	78	45	33
1909	2,877	2,838	2,132	1,758	374	76	48	28
1908	3,265	3,194	2,544	2,037	507	55	37	18
1907	3,323	3,281	2,666	2,079	587	54	37	17
1906	3,259	3,246	2,650	1,936	714	61	40	21
1905	3,185	3,131	2,554	1,839	715	64	43	21
1904	2,856	2,748	2,154	1,505	649	68	49	19
1903	3,120	3,075	2,580	1,947	633	59	35	24
1902	3,113	3,048	2,553	1,948	605	69	47	22
1901	3,759	3,684	3,192	2,263	929	58	40	18
1900	3,427	3,426	2,910	2,115	795	60	38	22

Constant 1954 Dollars, by Broad Product Groups: 1900-1961

millions of dollars)

Forest products				Minerals								Year
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	
							Total	Total, except gold				
121	34	62	25	1,927	1,145	328	1,093	311	367	4	135	1961
125	38	57	30	1,147	1,145	302	310	308	398	6	131	1960
108	34	37	37	833	831	173	129	127	411	5	115	1959
91	32	34	25	1,022	991	159	246	215	506	4	107	1958
99	36	37	26	1,729	1,562	280	406	239	928	4	111	1957
97	34	33	30	1,340	1,314	283	185	159	759	5	108	1956
100	37	36	27	1,077	1,071	226	159	153	593	4	95	1955
89	32	27	30	926	909	151	190	173	491	4	90	1954
65	28	14	23	877	847	129	126	96	548	4	70	1953
67	32	18	17	1,041	1,014	143	149	122	675	5	69	1952
89	43	19	27	1,625	1,015	118	718	108	711	4	74	1951
83	28	11	44	1,223	714	100	611	102	438	4	70	1950
67	29	11	27	870	795	131	185	110	484	5	65	1949
65	28	12	25	1,136	954	143	299	117	630	4	60	1948
104	59	15	30	1,448	1,265	231	324	141	830	4	59	1947
64	28	10	26	1,159	940	122	317	98	663	4	53	1946
48	19	14	15	1,187	990	121	354	157	666	4	42	1945
46	16	14	16	2,134	1,181	160	1,211	258	725	3	35	1944
56	13	17	26	1,011	987	173	235	211	566	2	35	1943
57	20	20	17	802	801	172	133	132	465	2	30	1942
80	30	21	29	718	718	153	105	105	417	3	40	1941
90	42	26	22	923	922	202	229	228	452	2	38	1940
97	48	10	39	1,008	1,008	127	237	237	604	2	38	1939
85	43	9	33	966	960	110	216	210	604	1	35	1938
122	63	15	44	975	929	156	219	173	559	2	39	1937
111	56	10	45	699	672	74	159	132	431	1	34	1936
114	57	10	47	667	665	69	149	147	418	1	30	1935
107	59	8	40	695	640	62	219	164	382	1	31	1934
108	56	5	47	1,117	536	30	705	124	352	1	29	1933
97	50	5	42	1,697	495	15	1,321	119	340	1	20	1932
124	74	6	44	1,328	677	29	856	205	414	2	27	1931
157	102	7	48	1,032	904	50	425	297	522	2	33	1930
201	139	7	55	1,233	1,049	75	555	371	559	3	41	1929
197	141	6	50	1,748	1,046	70	1,113	411	531	3	31	1928
194	134	5	55	1,071	978	51	489	396	496	2	33	1927
174	123	5	46	1,019	1,003	46	391	375	555	2	25	1926
161	114	4	43	1,061	883	37	576	398	418	2	28	1925
179	120	4	55	953	907	36	461	415	431	2	23	1924
156	108	4	44	817	784	41	333	300	417	3	23	1923
124	85	4	35	606	596	38	264	254	280	3	21	1922
89	58	4	27	608	602	38	216	210	335	3	16	1921
104	74	8	22	847	781	81	302	236	435	4	25	1920
104	65	9	30	922	717	74	525	320	306	4	13	1919
72	48	6	18	875	861	98	430	416	334	4	9	1918
84	51	6	27	1,088	912	117	613	437	345	4	9	1917
96	56	4	36	788	760	114	344	316	319	3	8	1916
93	57	2	34	673	641	71	313	281	282	2	5	1915
126	91	2	33	709	635	41	390	316	261	4	13	1914
192	132	2	58	758	686	63	393	321	281	7	14	1913
187	127	2	58	659	613	64	337	291	242	3	13	1912
177	118	2	57	604	602	50	308	306	230	3	13	1911
152	102	1	49	556	508	36	317	269	191	2	10	1910
135	86	2	47	534	495	28	306	267	188	2	10	1909
131	79	1	51	535	464	22	320	249	181	2	10	1908
161	99	2	60	442	400	26	232	190	172	2	10	1907
151	91	2	58	397	384	27	209	196	151	2	8	1906
130	78	1	51	437	383	22	261	207	143	3	8	1905
144	85	2	57	490	382	22	331	223	126	3	8	1904
137	83	1	53	344	299	7	208	163	118	5	6	1903
121	63	1	57	370	305	8	241	176	110	5	6	1902
132	67	2	63	377	302	14	228	153	122	7	6	1901
127	73	1	53	330	329	21	181	180	117	6	5	1900

Table A4.--Raw Materials Apparent Consumption in the United States

(All consumption figures

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	50,906	51,586	29,855	12,305	17,550	850	687	163
1960	51,271	50,891	29,233	12,029	17,204	799	640	159
1959	51,082	50,733	29,156	12,095	17,061	802	651	151
1958	48,588	48,276	27,869	11,519	16,350	771	619	152
1957	49,434	49,271	27,911	11,424	16,487	762	599	163
1956	50,140	49,973	28,324	11,550	16,774	752	601	151
1955	48,155	47,994	27,455	11,299	16,156	712	561	151
1954	45,359	45,274	26,458	10,963	15,495	721	576	145
1953	46,441	46,356	26,732	11,383	15,349	711	551	160
1952	45,856	45,082	26,218	11,331	14,887	720	564	156
1951	44,090	44,550	25,964	11,461	14,503	681	520	161
1950	43,251	43,515	25,766	11,218	14,548	674	530	144
1949	41,065	40,304	24,748	10,816	13,932	669	505	164
1948	43,810	42,000	25,011	11,062	13,949	664	474	190
1947	42,674	40,856	25,274	10,981	14,293	581	415	166
1946	40,069	39,853	25,377	11,103	14,274	671	442	229
1945	39,806	39,877	25,413	11,123	14,290	593	424	169
1944	39,529	40,347	25,670	11,061	14,609	546	375	171
1943	38,543	38,419	24,033	10,285	13,748	488	328	160
1942	38,157	37,723	23,401	10,472	12,929	444	305	139
1941	38,530	37,389	23,026	10,740	12,286	576	384	192
1940	38,427	34,054	21,565	9,736	11,829	567	392	175
1939	35,412	31,699	20,744	9,465	11,279	561	433	128
1938	31,380	29,285	19,427	8,757	10,670	522	415	107
1937	33,434	31,716	20,097	9,370	10,727	602	459	143
1936	31,800	30,561	19,761	9,008	10,753	602	455	147
1935	29,935	28,183	18,722	8,727	9,995	507	382	125
1934	28,415	27,198	18,819	7,882	10,937	458	373	85
1933	26,402	26,581	18,589	7,900	10,689	425	331	94
1932	24,546	25,205	18,019	7,609	10,410	429	319	110
1931	27,186	27,413	18,662	8,167	10,495	484	358	126
1930	28,787	28,705	18,472	8,124	10,348	503	375	128
1929	30,904	30,710	18,919	8,479	10,440	535	406	129
1928	28,743	29,170	18,353	8,092	10,261	486	371	115
1927	29,368	29,207	18,353	8,042	10,311	464	369	95
1926	29,542	29,323	18,395	8,145	10,250	442	353	89
1925	28,379	28,273	17,849	7,764	10,085	432	348	84
1924	27,924	27,508	17,428	7,322	10,106	425	339	86
1923	28,674	28,267	17,463	7,650	9,813	389	302	87
1922	25,555	25,139	16,294	6,991	9,303	390	315	75
1921	22,884	21,903	13,934	5,412	8,522	377	315	62
1920	26,337	25,728	16,207	7,617	8,590	382	324	58
1919	23,964	23,990	15,490	6,732	8,758	345	291	54
1918	25,297	25,106	15,958	7,406	8,552	361	305	56
1917	26,194	24,806	15,607	7,313	8,294	403	342	61
1916	23,458	23,069	14,051	5,802	8,249	389	333	56
1915	22,594	22,379	14,273	6,208	8,065	394	322	72
1914	23,735	23,594	15,656	7,391	8,265	437	368	69
1913	22,916	22,750	14,322	6,127	8,195	399	328	71
1912	22,892	22,720	14,584	6,463	8,121	383	311	72
1911	22,423	22,165	14,360	6,270	8,090	394	322	72
1910	22,092	21,916	13,912	6,112	7,800	388	314	74
1909	21,542	21,353	13,918	6,098	7,820	369	295	74
1908	20,685	20,445	13,458	5,767	7,691	367	295	72
1907	20,787	20,593	12,950	5,546	7,404	363	291	72
1906	20,890	20,646	13,525	6,386	7,139	360	289	71
1905	19,795	19,646	12,830	5,720	7,110	359	289	70
1904	19,612	19,503	13,211	6,356	6,855	343	274	69
1903	18,548	18,418	12,051	5,357	6,694	348	278	70
1902	17,793	17,663	11,796	5,508	6,288	326	256	70
1901	16,837	16,715	10,999	4,768	6,231	331	261	70
1900	16,528	16,372	10,986	4,736	6,250	316	247	69

in Constant 1954 Dollars, by Broad Product Groups: 1900-1961

in millions of dollars)

Forest products				Minerals								Year
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	
							Total	Total, except gold				
2,987	1,528	630	829	17,214	17,894	979	460	1,140	13,031	1,851	893	1961
2,996	1,555	637	804	18,243	17,863	1,191	1,532	1,152	12,829	1,818	873	1960
3,205	1,753	620	832	17,919	17,570	1,156	1,523	1,174	12,573	1,795	872	1959
2,878	1,561	569	748	17,070	16,758	1,060	1,543	1,231	12,023	1,670	774	1958
2,884	1,521	620	743	17,877	17,714	1,491	1,642	1,479	12,255	1,634	855	1957
3,198	1,774	665	759	17,866	17,699	1,416	1,686	1,519	12,300	1,580	884	1956
3,097	1,740	595	762	16,891	16,730	1,433	1,534	1,373	11,615	1,503	806	1955
2,931	1,684	537	710	15,249	15,164	1,215	1,365	1,280	10,589	1,346	734	1954
2,981	1,692	553	736	16,017	15,932	1,577	1,580	1,495	10,882	1,230	748	1953
2,976	1,706	537	733	15,942	15,168	1,215	2,264	1,490	10,539	1,212	712	1952
3,014	1,685	557	772	14,431	14,891	1,304	721	1,181	10,501	1,173	732	1951
3,010	1,775	485	750	13,801	14,065	1,156	1,147	1,411	9,769	1,061	668	1950
2,679	1,442	417	820	12,968	12,208	916	1,947	1,186	8,645	913	548	1949
2,958	1,667	475	816	15,177	13,367	1,047	2,928	1,118	9,662	949	591	1948
2,808	1,542	441	825	14,011	12,193	833	2,806	988	8,984	862	526	1947
2,702	1,511	399	792	11,319	11,103	777	1,010	794	8,265	744	523	1946
2,422	1,252	348	822	11,378	11,449	927	1,073	1,144	8,302	587	489	1945
2,612	1,462	328	822	10,701	11,519	1,006	355	1,173	8,274	583	483	1944
2,627	1,518	308	801	11,395	11,271	1,115	1,462	1,338	7,636	671	511	1943
2,833	1,629	339	865	11,479	11,045	1,107	1,853	1,419	7,247	805	467	1942
2,915	1,621	327	967	12,013	10,872	991	2,695	1,554	7,126	786	415	1941
2,616	1,348	278	990	13,679	9,306	707	5,429	1,056	6,576	647	320	1940
2,512	1,236	269	1,007	11,595	7,882	490	4,440	727	5,777	628	260	1939
2,313	1,062	229	1,022	9,118	7,023	261	2,775	680	5,333	515	234	1938
2,520	1,230	283	1,007	10,215	8,497	644	2,626	908	6,069	568	308	1937
2,421	1,177	248	996	9,016	7,777	515	2,067	828	5,644	541	249	1936
2,174	961	214	999	8,532	6,780	301	2,664	912	4,996	367	204	1935
1,998	774	194	1,030	7,140	5,923	224	1,653	436	4,731	362	170	1934
1,949	707	190	1,052	5,439	5,618	184	261	440	4,522	315	157	1933
1,753	556	161	1,036	4,345	5,004	98	-388	271	4,183	335	117	1932
1,996	829	187	980	6,044	6,271	283	330	557	4,775	467	189	1931
2,405	1,229	205	971	7,407	7,325	520	637	555	5,382	630	238	1930
2,777	1,615	216	946	8,673	8,479	657	1,034	840	6,001	729	252	1929
2,659	1,523	200	936	7,245	7,672	536	333	760	5,462	685	229	1928
2,703	1,565	189	949	7,848	7,687	548	864	703	5,540	684	212	1927
2,803	1,692	188	923	7,902	7,683	607	1,002	783	5,409	651	233	1926
2,853	1,754	167	932	7,245	7,139	568	801	695	5,045	628	203	1925
2,809	1,677	158	974	7,262	6,846	468	1,058	642	4,974	569	193	1924
2,922	1,765	154	1,003	7,900	7,493	569	1,114	707	5,453	547	217	1923
2,707	1,520	140	1,047	6,164	5,748	395	986	570	4,189	418	176	1922
2,460	1,242	103	1,115	6,113	5,132	221	1,305	324	4,119	337	131	1921
2,772	1,510	127	1,135	6,976	6,367	549	1,266	657	4,583	384	194	1920
2,720	1,489	104	1,127	5,409	5,434	495	526	551	3,891	329	168	1919
2,656	1,393	102	1,161	6,322	6,131	635	845	654	4,362	301	179	1918
2,804	1,562	105	1,137	7,380	5,992	620	2,025	637	4,158	393	184	1917
2,963	1,730	103	1,130	6,055	5,666	587	1,137	748	3,718	452	161	1916
2,804	1,600	97	1,107	5,123	4,908	419	748	533	3,418	407	131	1915
2,927	1,711	90	1,126	4,715	4,573	332	526	384	3,307	426	124	1914
3,009	1,825	86	1,098	5,187	5,020	488	616	449	3,487	451	145	1913
3,062	1,876	84	1,102	4,863	4,691	411	646	474	3,243	432	131	1912
3,007	1,790	80	1,137	4,662	4,404	336	675	417	3,081	445	125	1911
3,085	1,874	75	1,136	4,707	4,531	460	593	417	3,089	438	127	1910
3,072	1,892	69	1,111	4,183	3,994	406	608	419	2,629	425	115	1909
2,954	1,781	57	1,116	3,906	3,666	289	566	326	2,602	358	91	1908
3,121	1,941	67	1,113	4,353	4,159	417	559	365	2,884	381	112	1907
3,056	1,954	60	1,042	3,949	3,705	389	631	387	2,431	376	122	1906
2,927	1,849	52	1,026	3,679	3,530	348	488	339	2,386	355	102	1905
2,890	1,811	50	1,029	3,168	3,059	214	401	292	2,144	321	88	1904
2,836	1,750	46	1,040	3,313	3,183	321	442	312	2,145	316	89	1903
2,793	1,700	43	1,050	2,878	2,748	324	416	286	1,726	322	90	1902
2,718	1,620	38	1,060	2,789	2,667	300	409	287	1,721	273	86	1901
2,662	1,541	34	1,087	2,564	2,408	260	403	247	1,558	264	79	1900

Table A5.--Raw Materials Apparent Consumption in the United States

(All consumption figures

Year	All raw materials, except gold	Foods		Energy materials					
				Total		Coal		Oil and gas	
		Dollars	Percent of all raw materials	Dollars	Percent of all raw materials	Dollars	Percent of all energy materials	Dollars	Percent of all energy materials
1961	51,586	26,511	51.4	13,352	25.9	1,805	13.5	11,226	84.1
1960	50,891	25,838	50.8	13,165	25.8	1,882	14.3	10,947	83.1
1959	50,733	25,606	50.5	12,924	25.5	1,878	14.5	10,695	82.8
1958	48,276	24,683	51.1	12,360	25.6	1,809	14.6	10,214	82.7
1957	49,271	24,634	50.0	12,603	25.6	2,081	16.5	10,174	80.7
1956	49,973	24,751	49.5	12,678	25.4	2,179	17.2	10,121	79.8
1955	47,994	23,929	49.9	12,013	25.0	2,086	17.4	9,529	79.3
1954	45,274	23,215	51.2	10,981	24.3	1,873	17.0	8,716	79.4
1953	46,356	23,118	49.9	11,298	24.4	2,177	19.3	8,705	77.0
1952	45,082	22,635	50.2	10,974	24.3	2,225	20.3	8,314	75.7
1951	44,550	22,116	49.6	10,957	24.6	2,493	22.7	8,008	73.1
1950	43,515	21,754	50.0	10,227	23.5	2,590	25.3	7,179	70.2
1949	40,304	21,430	53.2	9,172	22.7	2,198	24.0	6,447	70.3
1948	42,000	21,151	50.4	10,179	24.2	2,960	29.1	6,702	65.8
1947	40,856	21,509	52.6	9,500	23.3	2,981	31.4	6,003	63.2
1946	39,853	21,440	53.8	8,776	22.0	2,708	30.9	5,557	63.3
1945	39,877	21,679	54.3	8,841	22.2	2,946	33.3	5,356	60.6
1944	40,347	21,796	54.0	8,818	21.9	3,222	36.5	5,052	57.3
1943	38,419	20,061	52.2	8,165	21.3	3,063	37.5	4,573	56.0
1942	37,723	19,345	51.3	7,796	20.7	3,036	39.0	4,211	54.0
1941	37,389	18,916	50.6	7,784	20.8	2,709	34.8	4,417	56.7
1940	34,054	18,301	53.8	7,263	21.3	2,450	33.7	4,126	56.8
1939	31,699	17,745	56.0	6,499	20.5	2,173	33.4	3,604	55.5
1938	29,285	16,897	57.7	6,065	20.7	1,926	31.8	3,407	56.1
1937	31,716	17,042	53.7	6,776	21.4	2,409	35.6	3,660	54.0
1936	30,561	16,799	55.0	6,374	20.8	2,417	37.9	3,227	50.6
1935	28.183	16,136	57.3	5,748	20.4	2,095	36.4	2,901	50.5
1934	27,198	16,424	60.4	5,519	20.3	2,073	37.6	2,658	48.1
1933	26,581	16,086	60.5	5,332	20.1	1,902	35.7	2,620	49.1
1932	25,205	15,924	63.2	4,978	19.7	1,795	36.1	2,388	47.9
1931	27,413	16,279	59.4	5,501	20.1	2,190	39.8	2,585	47.0
1930	28,705	16,074	56.0	6,048	21.1	2,641	43.7	2,741	45.3
1929	30,710	16,092	52.4	6,606	21.5	2,972	45.0	3,029	45.8
1928	29,170	15,710	53.9	6,068	20.8	2,835	46.7	2,627	43.3
1927	29,207	15,585	53.4	6,144	21.0	2,944	47.9	2,596	42.3
1926	29,323	15,781	53.8	6,000	20.5	3,156	52.5	2,253	37.6
1925	28,273	15,300	54.1	5,663	20.0	2,803	49.5	2,242	39.6
1924	27,508	15,209	55.3	5,612	20.4	2,855	50.8	2,119	37.8
1923	28,267	15,317	54.2	6,095	21.6	3,245	53.3	2,208	36.2
1922	25,139	14,532	57.8	4,871	19.4	2,343	48.1	1,846	37.9
1921	21,903	12,860	58.7	4,859	22.2	2,535	52.2	1,584	32.6
1920	25,728	13,799	53.6	5,312	20.7	3,146	54.2	1,437	27.1
1919	23,989	13,451	56.1	4,622	19.3	2,752	59.6	1,139	24.6
1918	25,106	13,360	53.2	5,118	20.4	3,349	65.4	1,013	19.8
1917	24,806	13,299	53.6	4,891	19.7	3,215	65.7	943	19.3
1916	23,069	12,228	53.0	4,453	19.3	2,913	65.4	805	18.1
1915	22,379	12,756	57.0	4,148	18.5	2,671	64.4	747	18.0
1914	23,592	13,179	55.8	4,049	17.2	2,608	64.4	699	17.3
1913	22,750	12,596	55.4	4,212	18.5	2,844	67.5	643	15.3
1912	22,720	13,110	57.7	3,970	17.5	2,676	67.4	567	14.3
1911	22,165	12,551	56.6	3,843	17.4	2,528	65.8	553	14.4
1910	21,916	12,364	56.4	3,840	17.5	2,553	66.4	536	14.0
1909	21,353	12,392	58.0	3,368	15.8	2,173	64.5	456	13.5
1908	20,445	11,986	58.6	3,354	16.4	2,167	64.6	435	13.0
1907	20,593	11,587	56.3	3,627	17.6	2,466	68.0	418	11.5
1906	20,646	11,880	57.6	3,182	15.4	2,123	66.7	308	9.7
1905	19,646	11,472	58.4	3,155	16.1	2,057	65.2	329	10.4
1904	19,503	11,778	60.4	2,931	15.0	1,855	63.2	289	9.9
1903	18,418	11,024	59.9	2,948	16.0	1,898	64.4	247	8.4
1902	17,663	10,635	60.2	2,545	14.4	1,521	59.7	205	8.1
1901	16,715	10,071	60.3	2,557	15.3	1,573	61.5	148	5.8
1900	16,372	9,911	60.5	2,409	14.7	1,422	59.1	135	5.6

in Constant 1954 Dollars, by Broad Use Classes: 1900-1961

in millions of dollars)

Energy materials--Continued		Physical-structure materials								
Fuel wood		Total		Agricultural nonfoods and wildlife products		Forest products		Minerals, except gold		Year
Dollars	Percent of all energy materials	Dollars	Percent of all raw materials	Dollars	Percent of all physical-structure materials	Dollars	Percent of all physical-structure materials	Dollars	Percent of all physical-structure materials	
321	2.4	11,723	22.7	4,194	35.8	2,666	22.7	4,863	41.5	1961
336	2.6	11,888	23.4	4,194	35.3	2,660	22.4	5,034	42.3	1960
351	2.7	12,203	24.0	4,352	35.7	2,854	23.4	4,997	40.9	1959
337	2.7	11,233	23.3	3,957	35.2	2,541	22.6	4,735	42.2	1958
348	2.8	12,034	24.4	4,039	33.6	2,536	21.1	5,459	45.3	1957
378	3.0	12,544	25.1	4,325	34.5	2,820	22.5	5,399	43.0	1956
398	3.3	12,052	25.1	4,238	35.2	2,699	22.4	5,115	42.4	1955
392	3.6	11,078	24.5	3,964	35.8	2,539	22.9	4,575	41.3	1954
416	3.7	11,940	25.7	4,325	36.2	2,565	21.5	5,050	42.3	1953
435	4.0	11,473	25.5	4,303	37.5	2.541	22.2	4,629	40.3	1952
456	4.2	11,477	25.8	4,529	39.5	2,558	22.3	4,390	38.2	1951
458	4.5	11,534	26.5	4,686	40.6	2,552	22.1	4,296	37.3	1950
527	5.7	9,702	24.1	3,987	41.1	2,152	22.2	3,563	36.7	1949
517	5.1	10,670	25.4	4,524	42.4	2,441	22.9	3,705	34.7	1948
516	5.4	9,847	24.1	4,346	44.1	2,292	23.3	3,209	32.6	1947
511	5.8	9,637	24.2	4,608	47.8	2,191	22.7	2,838	29.5	1946
539	6.1	9,357	23.5	4,327	46.3	1,883	20.1	3,147	33.6	1945
544	6.2	9,733	24.1	4,420	45.4	2,068	21.3	3,245	33.3	1944
529	6.5	10,193	26.5	4,460	43.7	2,098	20.6	3,635	35.7	1943
549	7.0	10,582	28.0	4,500	42.5	2,284	21.6	3,798	35.9	1942
658	8.5	10,689	28.6	4,686	43.8	2,257	21.1	3,746	35.1	1941
687	9.5	8,490	24.9	3,831	45.1	1,929	22.7	2,730	32.2	1940
722	11.1	7,455	23.5	3,560	47.8	1,790	24.0	2,105	28.2	1939
732	12.1	6,323	21.6	3,052	48.3	1,581	25.0	1,690	26.7	1938
707	10.4	7,898	24.9	3,657	46.3	1,813	23.0	2,428	30.7	1937
730	11.5	7,388	24.2	3,564	48.2	1,691	22.9	2,133	28.9	1936
752	13.1	6,299	22.3	3,093	49.1	1,422	22.6	1,784	28.3	1935
788	14.3	5,255	19.3	2,853	54.3	1,210	23.0	1,192	22.7	1934
810	15.2	5,163	19.4	2,928	56.7	1,139	22.1	1,096	21.2	1933
795	16.0	4,303	17.1	2,524	58.7	958	22.3	821	19.1	1932
726	13.2	5,633	20.5	2,867	51.0	1,270	22.5	1,496	26.5	1931
666	11.0	6,583	22.9	2,901	44.1	1,739	26.4	1,943	29.5	1930
605	9.2	8,012	26.1	3,362	42.0	2,172	27.1	2,478	30.9	1929
606	10.0	7,392	25.3	3,129	42.3	2,053	27.8	2,210	29.9	1928
604	9.8	7,478	25.6	3,232	43.2	2,099	28.1	2,147	28.7	1927
591	9.9	7,542	25.7	3,056	40.5	2,212	29.3	2,274	30.2	1926
618	10.9	7,310	25.9	2,981	40.8	2,235	30.6	2,094	28.6	1925
638	11.4	6,687	24.3	2,644	39.5	2,171	32.5	1,872	28.0	1924
642	10.5	6,855	24.2	2,535	37.0	2,280	33.2	2,040	29.8	1923
682	14.0	5,736	22.8	2,152	37.5	2,025	35.3	1,559	27.2	1922
740	15.2	4,184	19.1	1,451	34.7	1,720	41.1	1,013	24.2	1921
729	13.7	6,617	25.7	2,790	42.2	2,043	30.9	1,784	26.9	1920
731	15.8	5,916	24.6	2,384	40.3	1,989	33.6	1,543	26.1	1919
756	14.8	6,628	26.4	2,959	44.6	1,900	28.7	1,769	26.7	1918
733	15.0	6,616	26.7	2,711	41.0	2,071	31.3	1,834	27.7	1917
735	16.5	6,388	27.7	2,212	34.6	2,228	34.9	1,948	30.5	1916
730	17.6	5,475	24.5	1,911	34.9	2,074	37.9	1,490	27.2	1915
742	18.3	6,364	27.0	2,913	45.8	2,185	34.3	1,266	19.9	1914
725	17.2	5,942	26.1	2,125	35.8	2,284	38.4	1,533	25.8	1913
727	18.3	5,640	24.8	1,857	32.9	2,335	41.4	1,448	25.7	1912
762	19.8	5,771	26.0	2,203	38.2	2,245	38.9	1,323	22.9	1911
751	19.6	5,712	26.1	1,936	33.9	2,334	40.9	1,442	25.2	1910
739	22.0	5,593	26.2	1,895	33.9	2,333	41.7	1,365	24.4	1909
752	22.4	5,105	25.0	1,839	36.0	2,202	43.1	1,064	20.9	1908
743	20.5	5,379	26.1	1,726	32.1	2,378	44.2	1,275	23.7	1907
751	23.6	5,584	27.0	2,005	35.9	2,305	41.3	1,274	22.8	1906
769	24.4	5,019	25.5	1,717	34.2	2,158	43.0	1,144	22.8	1905
787	26.9	4,794	24.6	1,776	37.0	2,103	43.9	915	19.1	1904
803	27.2	4,446	24.1	1,375	30.9	2,033	45.7	1,038	23.4	1903
819	32.2	4,483	25.4	1,487	33.2	1,974	44.0	1,022	22.8	1902
836	32.7	4,087	24.4	1,259	30.8	1,882	46.1	946	23.1	1901
851	35.3	4,052	24.8	1,391	34.3	1,811	44.7	850	21.0	1900

Table A6.--Raw Materials Production in the United States in

(All production figures

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	21,092	21,044	13,092	4,917	8,175	199	114	85
1960	21,275	21,223	13,309	5,383	7,926	202	112	90
1959	20,433	20,383	12,659	4,856	7,803	194	112	82
1958	20,848	20,794	13,441	5,937	7,504	206	113	93
1957	20,274	20,218	12,318	4,663	7,655	216	116	100
1956	20,337	20,280	12,358	4,578	7,780	196	119	77
1955	19,692	19,633	12,123	4,696	7,427	185	109	76
1954	18,585	18,528	11,654	4,473	7,181	186	112	74
1953	18,616	18,555	11,471	4,419	7,052	190	108	82
1952	18,203	18,144	11,205	4,432	6,773	188	114	74
1951	17,578	17,516	10,552	3,976	6,576	177	111	66
1950	16,969	16,894	10,551	3,994	6,557	157	116	41
1949	16,455	16,393	10,676	4,275	6,401	173	117	56
1948	17,640	17,577	11,183	4,997	6,186	174	112	62
1947	16,551	16,485	10,354	3,757	6,597	175	109	66
1946	16,186	16,137	10,597	4,002	6,595	180	106	74
1945	15,904	15,874	10,377	3,618	6,759	163	105	58
1944	16,473	16,442	10,705	3,746	6,959	151	95	56
1943	15,152	15,110	9,528	2,852	6,676	145	89	56
1942	15,471	15,363	9,918	3,830	6,088	132	84	48
1941	14,336	14,188	8,978	3,505	5,473	147	94	53
1940	13,529	13,377	8,634	3,375	5,259	149	92	57
1939	12,676	12,530	8,216	3,250	4,966	139	94	45
1938	12,361	12,228	8,313	3,567	4,746	143	94	49
1937	13,408	13,280	8,804	4,190	4,614	145	95	50
1936	11,085	10,967	6,901	2,192	4,709	139	96	43
1935	11,315	11,214	7,720	3,412	4,308	121	87	34
1934	10,240	10,154	6,902	1,984	4,918	114	82	32
1933	10,320	10,248	7,201	2,399	4,802	99	69	30
1932	10,579	10,506	7,708	3,062	4,646	117	67	50
1931	11,583	11,513	8,150	3,478	4,672	120	72	48
1930	11,744	11,678	7,659	3,032	4,627	145	85	60
1929	12,235	12,171	7,647	3,076	4,571	122	87	35
1928	11,980	11,913	7,730	3,177	4,553	111	81	30
1927	11,835	11,769	7,548	3,002	4,546	113	77	36
1926	12,047	11,977	7,773	3,239	4,534	112	79	33
1925	11,459	11,387	7,431	2,979	4,452	102	71	31
1924	11,402	11,326	7,485	2,940	4,545	99	75	24
1923	11,403	11,328	7,260	2,795	4,465	86	60	26
1922	10,284	10,212	7,023	2,824	4,199	103	65	38
1921	9,381	9,308	6,334	2,417	3,917	96	68	28
1920	10,641	10,566	6,991	3,074	3,917	101	77	24
1919	10,277	10,191	6,970	2,816	4,154	102	82	20
1918	10,666	10,565	7,003	2,915	4,088	111	86	25
1917	10,307	10,185	6,594	2,757	3,837	113	88	25
1916	9,894	9,756	6,294	2,460	3,834	110	86	24
1915	9,888	9,739	6,606	2,863	3,743	107	85	22
1914	9,833	9,695	6,630	3,045	3,585	128	78	50
1913	9,714	9,579	6,307	2,651	3,656	125	72	53
1912	9,818	9,679	6,554	2,899	3,655	115	67	48
1911	9,481	9,335	6,356	2,639	3,717	106	69	37
1910	9,216	9,073	6,055	2,520	3,535	113	70	43
1909	9,007	8,857	6,056	2,521	3,535	117	71	46
1908	9,000	8,861	6,200	2,612	3,588	118	72	46
1907	9,014	8,882	6,004	2,510	3,494	111	73	38
1906	9,024	8,877	6,243	2,815	3,428	109	74	35
1905	8,607	8,474	5,921	2,535	3,386	110	74	36
1904	8,371	8,249	5,867	2,588	3,279	108	74	34
1903	8,124	8,013	5,651	2,440	3,211	112	72	40
1902	7,765	7,644	5,507	2,489	3,018	100	71	29
1901	7,723	7,604	5,501	2,360	3,141	103	70	33
1900	7,534	7,414	5,423	2,360	3,063	108	66	42

Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961

in millions of dollars)

Forest products				Minerals								Year
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	
							Total	Total, except gold				
885	428	192	265	6,916	6,868	259	356	308	4,761	1,036	504	1961
897	442	194	261	6,868	6,816	322	345	293	4,702	1,013	486	1960
948	500	181	267	6,632	6,582	228	292	242	4,643	993	476	1959
856	449	165	242	6,345	6,291	246	319	265	4,433	920	427	1958
868	444	182	242	6,872	6,816	366	386	330	4,768	895	457	1957
956	515	191	250	6,827	6,770	348	383	326	4,767	852	477	1956
921	503	170	248	6,463	6,404	364	356	297	4,503	803	437	1955
875	492	149	234	5,870	5,813	282	327	270	4,127	720	414	1954
890	497	150	243	6,065	6,004	386	361	300	4,271	653	394	1953
890	506	143	241	5,920	5,861	316	378	319	4,216	642	368	1952
906	503	145	258	5,943	5,881	365	350	288	4,256	611	361	1951
890	514	119	257	5,371	5,296	299	346	271	3,845	555	326	1950
815	436	102	277	4,791	4,729	260	294	232	3,477	476	284	1949
892	501	118	273	5,391	5,328	306	312	249	3,997	482	294	1948
867	480	109	278	5,155	5,089	288	315	249	3,831	440	281	1947
828	461	101	266	4,581	4,532	224	240	191	3,492	383	242	1946
744	381	91	272	4,620	4,590	289	272	242	3,516	307	236	1945
812	446	92	274	4,805	4,774	315	387	356	3,562	309	232	1944
818	464	82	272	4,661	4,619	356	458	416	3,277	357	213	1943
872	492	90	290	4,549	4,441	361	442	334	3,110	429	207	1942
904	495	86	323	4,307	4,159	304	436	288	2,968	406	193	1941
826	422	75	329	3,920	3,768	244	414	262	2,771	333	158	1940
792	389	59	344	3,529	3,383	175	368	222	2,533	319	134	1939
733	336	48	349	3,172	3,039	105	318	185	2,359	263	127	1938
791	392	54	345	3,668	3,540	233	378	250	2,633	281	143	1937
762	374	46	342	3,283	3,165	157	315	197	2,412	277	122	1936
697	311	40	346	2,777	2,676	100	246	145	2,147	181	103	1935
646	255	36	355	2,578	2,492	79	192	106	2,033	182	92	1934
632	232	36	364	2,388	2,316	54	159	87	1,936	153	86	1933
571	183	30	358	2,183	2,110	30	161	88	1,767	162	63	1932
646	270	36	340	2,667	2,597	93	225	155	2,031	220	98	1931
772	397	37	338	3,168	3,102	171	282	216	2,308	287	120	1930
892	524	39	329	3,574	3,510	213	348	284	2,567	329	117	1929
854	497	35	322	3,285	3,218	182	331	264	2,357	309	106	1928
868	504	34	330	3,306	3,240	184	320	254	2,393	307	102	1927
887	538	34	315	3,275	3,205	201	336	266	2,353	287	98	1926
905	555	30	320	3,021	2,949	186	332	260	2,141	271	91	1925
902	535	29	338	2,916	2,840	159	319	243	2,111	245	82	1924
927	555	28	344	3,130	3,055	204	307	232	2,290	234	95	1923
861	478	27	356	2,297	2,225	137	242	170	1,660	175	83	1922
795	393	23	379	2,156	2,083	82	177	104	1,688	141	68	1921
886	474	30	382	2,663	2,588	198	275	200	1,941	162	87	1920
876	467	27	382	2,329	2,243	175	276	190	1,670	136	72	1919
849	431	27	391	2,703	2,602	221	372	271	1,894	131	85	1918
898	485	28	385	2,702	2,580	229	402	280	1,825	165	81	1917
952	538	27	387	2,538	2,400	221	428	290	1,642	183	64	1916
905	501	25	379	2,270	2,121	159	381	232	1,507	171	52	1915
952	547	22	383	2,123	1,985	116	326	188	1,458	173	50	1914
1,003	595	22	386	2,279	2,144	174	329	194	1,544	180	52	1913
1,017	608	21	388	2,132	1,993	156	328	189	1,434	167	47	1912
1,001	581	21	399	2,018	1,872	125	317	171	1,371	162	43	1911
1,016	601	19	396	2,032	1,889	163	307	164	1,356	165	41	1910
1,007	601	19	387	1,827	1,677	148	315	165	1,169	156	39	1909
974	567	16	391	1,708	1,569	104	279	140	1,156	132	37	1908
1,032	622	19	391	1,867	1,735	151	268	136	1,267	141	40	1907
1,007	622	18	367	1,665	1,518	138	291	144	1,071	131	34	1906
964	588	15	361	1,612	1,479	124	273	140	1,051	128	36	1905
960	581	15	364	1,436	1,314	80	254	132	945	126	31	1904
941	561	14	366	1,420	1,309	102	229	118	940	122	27	1903
920	538	13	369	1,238	1,117	104	236	115	754	118	26	1902
905	516	12	377	1,214	1,095	85	226	107	771	106	26	1901
888	494	11	383	1,115	995	81	227	107	699	83	25	1900

Table A7 --Raw Materials Imports Into the United States in

(All import figures in

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Live-stock	Total	Fishery products	Wildlife products
1961	3,333	3,289	1,497	1,118	379	197	127	70
1960	3,499	3,208	1,434	1,103	331	170	114	56
1959	3,560	3,295	1,540	1,141	399	173	119	54
1958	3,303	3,050	1,363	1,026	337	151	100	51
1957	3,316	3,075	1,310	1,063	247	153	98	55
1956	3,092	2,976	1,306	1,063	243	144	91	53
1955	2,880	2,788	1,292	1,046	246	138	84	54
1954	2,575	2,541	1,197	998	199	129	79	50
1953	2,780	2,738	1,363	1,116	247	125	75	50
1952	3,317	2,657	1,382	1,088	294	132	76	56
1951	2,544	2,471	1,349	1,059	290	132	65	67
1950	2,757	2,611	1,407	1,068	339	138	63	75
1949	2,897	2,208	1,232	1,012	220	134	55	79
1948	3,957	2,230	1,320	995	325	140	48	92
1947	3,702	1,971	1,193	976	217	114	39	75
1946	2,272	1,931	1,194	849	345	157	44	113
1945	1,932	1,848	1,075	799	276	118	39	79
1944	1,960	1,870	1,165	922	243	111	35	76
1943	1,765	1,674	998	737	261	95	29	66
1942	1,875	1,593	924	603	321	79	20	59
1941	3,227	2,350	1,483	1,119	364	127	32	95
1940	5,682	1,905	1,212	980	232	127	39	88
1939	4,854	1,664	1,134	906	228	108	45	63
1938	3,267	1,512	1,023	862	161	85	39	46
1937	3,416	1,960	1,365	1,110	255	118	48	70
1936	2,828	1,808	1,219	977	242	125	43	82
1935	3,316	1,841	1,175	961	214	115	39	76
1934	2,375	1,320	912	776	136	80	34	46
1933	1,655	1,367	957	777	180	90	34	56
1932	1,586	1,171	860	724	136	79	33	46
1931	1,789	1,477	1,018	832	186	102	40	62
1930	1,729	1,608	1,110	902	208	93	40	53
1929	2,190	1,914	1,278	968	310	123	47	76
1928	1,894	1,713	1,130	852	278	112	41	71
1927	1,799	1,637	1,129	857	272	85	38	47
1926	1,824	1,684	1,138	887	251	82	38	44
1925	1,774	1,591	1,093	847	246	81	37	44
1924	1,915	1,576	1,063	758	305	88	35	53
1923	1,949	1,628	1,118	772	346	82	32	50
1922	1,861	1,550	1,049	715	334	60	32	28
1921	2,140	1,327	941	630	311	58	33	25
1920	2,085	1,553	1,086	686	400	67	35	32
1919	1,497	1,422	1,026	652	374	68	39	29
1918	1,459	1,375	1,019	548	471	55	32	23
1917	2,550	1,267	903	609	294	69	35	34
1916	1,432	1,196	851	559	292	73	36	37
1915	1,228	1,155	874	525	349	78	36	42
1914	1,295	1,240	976	508	468	61	39	22
1913	1,097	1,018	719	480	239	61	35	26
1912	1,019	961	678	480	198	59	29	30
1911	965	878	596	444	152	66	30	36
1910	927	870	589	430	159	68	29	39
1909	972	917	666	485	181	58	26	32
1908	851	712	510	393	117	46	24	22
1907	844	764	544	422	122	52	22	30
1906	842	758	529	408	121	56	22	34
1905	789	740	536	391	145	56	23	33
1904	784	710	525	410	115	54	21	33
1903	731	685	485	386	99	51	20	31
1902	754	699	496	395	101	58	18	40
1901	705	647	451	366	85	52	18	34
1900	612	591	419	310	109	44	16	28

Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961

millions of dollars)

Forest products				Minerals								Year
							Other metals					
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Total	Total, except gold	Mineral fuels	Construction materials	Other non-metallic minerals	
161	58	81	22	1,478	1,434	222	390	346	759	29	78	1961
152	53	81	18	1,743	1,452	238	656	365	741	31	77	1960
156	55	79	22	1,691	1,426	260	622	357	693	34	82	1959
135	46	73	16	1,654	1,401	202	648	395	711	27	66	1958
134	40	78	16	1,719	1,478	280	706	465	636	29	68	1957
144	46	84	14	1,498	1,382	265	555	439	586	30	62	1956
144	49	79	16	1,306	1,214	238	477	385	507	30	54	1955
131	42	74	15	1,118	1,084	209	413	379	423	26	47	1954
124	38	74	12	1,168	1,126	229	449	407	414	26	50	1953
120	34	76	10	1,683	1,023	177	1,046	386	382	26	52	1952
129	34	83	12	934	861	163	351	278	337	31	52	1951
135	47	77	11	1,077	931	158	514	368	336	26	43	1950
97	21	67	9	1,434	745	122	1,004	315	261	19	28	1949
109	25	74	10	2,388	661	127	2,002	275	206	23	30	1948
99	18	71	10	2,296	565	104	1,966	235	178	21	27	1947
87	17	61	9	834	493	98	535	194	157	16	28	1946
75	14	52	9	664	580	94	385	301	145	12	28	1945
62	13	43	6	622	532	108	362	272	112	12	28	1944
64	12	47	5	608	517	117	372	281	74	13	32	1943
80	21	52	7	792	510	111	593	311	45	13	30	1942
81	18	52	11	1,536	659	113	1,273	396	110	15	25	1941
65	10	45	10	4,278	501	90	4,058	281	93	10	27	1940
69	10	51	8	3,543	353	56	3,381	191	69	10	27	1939
59	7	46	6	2,100	345	37	1,971	216	61	7	24	1938
83	9	64	10	1,850	394	67	1,668	212	66	12	37	1937
72	9	56	7	1,412	392	60	1,249	229	67	9	27	1936
60	6	48	6	1,966	491	36	1,837	362	63	6	24	1935
51	4	43	4	1,332	277	28	1,221	166	58	5	20	1934
52	5	41	6	556	268	25	454	166	52	5	20	1933
45	5	36	4	602	187	12	489	74	84	3	14	1932
55	10	40	5	614	302	24	466	154	96	6	22	1931
70	17	47	6	456	335	43	255	134	118	10	30	1930
80	21	49	10	709	433	59	481	205	121	12	36	1929
75	20	46	9	577	396	45	389	208	99	11	33	1928
75	24	43	8	510	348	42	349	187	80	11	28	1927
80	26	43	11	524	384	45	342	202	93	12	32	1926
70	25	37	8	530	347	41	363	180	88	10	28	1925
67	24	35	8	697	358	32	523	184	104	9	29	1924
69	27	34	8	680	359	30	501	180	113	9	27	1923
59	21	30	8	693	382	27	479	168	158	7	22	1922
35	11	19	5	1,106	293	17	930	117	142	5	12	1921
48	18	23	7	884	352	38	694	162	120	8	24	1920
40	16	18	6	363	288	38	238	163	61	6	20	1919
36	16	15	5	349	265	46	241	157	45	5	12	1918
37	16	15	6	1,541	258	44	1,435	152	37	6	19	1917
37	17	15	5	471	235	40	375	139	26	5	25	1916
32	14	14	4	244	171	26	170	97	24	4	20	1915
32	12	14	6	226	171	24	150	95	21	5	26	1914
30	13	13	4	287	208	35	197	118	17	6	32	1913
30	14	13	3	252	194	26	179	121	10	6	31	1912
27	11	12	4	276	189	23	210	123	5	5	33	1911
27	13	11	3	243	186	27	174	117	5	5	32	1910
25	13	9	3	223	168	19	169	114	4	5	26	1909
19	10	7	2	276	137	16	234	95	4	4	18	1908
23	12	9	2	225	145	21	170	90	5	5	24	1907
23	14	7	2	234	150	22	176	92	4	4	28	1906
19	11	6	2	178	129	18	129	80	4	3	24	1905
16	9	5	2	189	115	11	149	75	4	3	22	1904
16	9	5	2	179	133	24	119	73	8	4	24	1903
17	10	5	2	183	128	23	128	73	6	3	23	1902
14	8	4	2	188	130	28	131	73	4	3	22	1901
12	7	3	2	137	116	23	89	68	4	3	18	1900

Table A8.--Raw Materials Exports From the United States in

(All export figures in

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Livestock	Total	Fishery products	Wildlife products
1961	3,312	2,609	2,026	1,738	288	35	11	24
1960	2,547	2,546	1,975	1,715	260	35	14	21
1959	2,027	2,025	1,594	1,338	256	32	14	18
1958	1,980	1,953	1,478	1,240	238	25	9	16
1957	2,598	2,448	1,731	1,457	274	31	12	19
1956	2,220	2,197	1,584	1,261	323	28	13	15
1955	1,736	1,731	1,216	917	299	27	13	14
1954	1,552	1,537	1,095	893	202	24	10	14
1953	1,425	1,398	996	817	179	22	9	13
1952	1,596	1,572	1,106	962	144	21	7	14
1951	2,336	1,788	1,305	1,092	213	25	11	14
1950	1,865	1,408	1,056	863	193	20	9	11
1949	1,473	1,405	1,016	862	154	27	13	14
1948	1,454	1,290	847	716	131	19	7	12
1947	1,885	1,721	1,121	880	241	35	19	16
1946	1,887	1,690	1,241	820	421	28	14	14
1945	1,623	1,446	986	590	396	25	15	10
1944	2,328	1,472	933	358	575	18	16	2
1943	1,445	1,423	960	382	578	23	21	2
1942	997	997	622	255	367	19	16	3
1941	823	823	476	301	175	21	17	4
1940	897	896	458	394	64	30	17	13
1939	1,071	1,071	602	540	62	26	14	12
1938	1,147	1,142	697	644	53	28	14	14
1937	1,074	1,033	582	539	43	26	14	12
1936	880	855	512	470	42	28	14	14
1935	880	879	538	493	45	32	16	16
1934	955	906	580	502	78	29	15	14
1933	1,520	997	713	636	77	24	9	15
1932	2,129	1,049	789	718	71	22	9	13
1931	1,696	1,111	762	676	86	26	11	15
1930	1,377	1,263	801	691	110	30	13	17
1929	1,638	1,473	939	807	132	31	17	14
1928	2,161	1,530	1,004	878	126	29	15	14
1927	1,655	1,572	1,077	953	124	25	13	12
1926	1,508	1,493	991	855	136	25	16	9
1925	1,587	1,427	978	817	161	27	16	11
1924	1,535	1,494	1,026	825	201	29	16	13
1923	1,333	1,303	903	663	240	23	13	10
1922	1,391	1,383	1,069	874	195	24	14	10
1921	1,536	1,530	1,232	1,007	225	19	12	7
1920	1,549	1,490	1,095	843	252	32	20	12
1919	1,957	1,773	1,381	918	463	41	32	9
1918	1,577	1,564	1,133	623	510	31	24	7
1917	1,483	1,325	881	570	311	33	19	14
1916	1,577	1,552	1,167	840	327	40	21	19
1915	1,666	1,637	1,312	978	334	31	21	10
1914	1,270	1,203	867	743	124	33	13	20
1913	1,360	1,295	908	786	122	41	15	26
1912	1,340	1,297	944	822	122	35	11	24
1911	1,164	1,162	825	684	141	28	9	19
1910	1,000	957	657	552	105	36	10	26
1909	1,081	1,045	761	616	145	32	10	22
1908	1,238	1,174	916	721	195	22	8	14
1907	1,249	1,211	968	746	222	21	8	13
1906	1,216	1,205	966	697	269	25	9	16
1905	1,191	1,142	913	649	264	25	9	16
1904	1,094	997	764	527	237	25	11	14
1903	1,181	1,140	939	705	234	26	8	18
1902	1,197	1,139	941	708	233	27	10	17
1901	1,467	1,400	1,202	841	361	23	9	14
1900	1,304	1,304	1,094	786	308	25	8	17

Z Less than 0.5 million dollars.

Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961

millions of dollars)

Forest products				Minerals									
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferroalloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	Year
							Total	Total, except gold				
43	11	24	8	1,208	505	130	834	131	148	3	93	1961
44	12	23	9	493	492	119	130	129	160	5	79	1960
38	11	15	12	363	361	72	56	54	165	3	67	1959
31	10	13	8	446	419	65	111	84	204	3	63	1958
34	11	15	8	802	652	117	245	95	371	3	66	1957
33	10	13	10	575	552	113	89	66	306	3	64	1956
34	11	14	9	459	454	93	69	64	238	3	56	1955
32	10	11	11	401	386	64	85	70	197	2	53	1954
23	9	6	8	384	357	51	67	40	220	3	43	1953
23	10	7	6	446	422	58	74	50	271	3	40	1952
29	13	7	9	977	429	48	594	46	287	2	46	1951
26	7	4	15	763	306	41	499	42	177	2	44	1950
23	9	5	9	407	339	53	113	45	198	2	41	1949
23	9	5	9	565	401	57	212	48	257	2	37	1948
34	18	6	10	695	531	92	227	63	338	2	36	1947
23	9	4	10	595	398	48	243	46	269	2	33	1946
17	6	6	5	595	418	49	254	77	265	2	25	1945
17	5	6	6	1,360	504	65	985	129	288	1	21	1944
20	4	7	9	442	420	71	122	100	226	1	22	1943
20	6	8	6	336	336	72	57	57	187	1	19	1942
28	9	8	11	298	298	62	44	44	167	1	24	1941
32	13	10	9	377	376	81	90	89	181	1	24	1940
33	15	4	14	410	410	52	92	92	241	1	24	1939
28	13	3	12	394	389	46	83	78	242	1	22	1938
41	19	6	16	425	384	68	107	66	223	1	26	1937
38	17	4	17	302	277	32	75	50	172	1	22	1936
39	18	4	17	271	270	29	57	56	166	(Z)	19	1935
35	18	3	14	311	262	26	114	65	152	(Z)	19	1934
37	17	2	18	746	223	13	576	53	140	(Z)	17	1933
33	16	2	15	1,285	205	6	1,131	51	135	(Z)	13	1932
41	23	2	16	867	282	11	675	90	164	1	16	1931
53	32	3	18	493	379	20	246	132	206	1	20	1930
65	43	3	19	603	438	30	327	162	221	1	24	1929
63	44	2	17	1,065	434	28	807	176	210	1	19	1928
62	41	2	19	491	408	21	252	169	197	1	20	1927
57	38	2	17	435	420	18	180	165	221	1	15	1926
52	35	2	15	530	370	14	333	173	166	1	16	1925
58	37	2	19	422	381	14	222	181	172	1	13	1924
50	33	1	16	357	327	16	160	130	167	1	13	1923
41	26	2	13	257	249	15	117	109	112	1	12	1922
30	18	2	10	255	249	15	95	89	135	1	9	1921
34	23	3	8	388	329	32	163	104	176	2	15	1920
35	20	4	11	500	316	29	339	155	124	1	7	1919
24	15	3	6	389	376	38	210	197	135	1	5	1918
29	16	3	10	540	382	45	349	191	140	1	5	1917
32	17	2	13	338	313	43	161	136	128	1	5	1916
31	18	1	12	292	263	26	149	120	113	1	3	1915
42	28	1	13	328	261	15	199	132	105	2	7	1914
63	41	1	21	348	283	23	203	138	113	2	7	1913
62	39	1	22	299	256	24	169	126	98	1	7	1912
59	37	1	21	252	250	18	134	132	93	1	6	1911
51	32	1	18	256	213	13	160	117	77	1	5	1910
45	27	1	17	243	207	10	151	115	76	1	5	1909
42	24	(Z)	18	258	194	8	171	107	73	1	5	1908
54	31	1	22	206	168	10	120	82	70	1	5	1907
50	28	1	21	175	164	10	99	88	61	1	4	1906
44	24	1	19	209	160	8	138	89	58	1	4	1905
48	27	1	20	257	160	8	193	96	51	1	4	1904
46	26	1	19	170	129	3	114	73	48	2	3	1903
41	19	1	21	188	130	3	137	79	44	1	3	1902
44	21	1	22	198	131	5	139	72	49	2	3	1901
44	23	1	20	141	141	8	81	81	47	2	3	1900

Table A9.--Raw Materials Apparent Consumption in the United States

(All consumption figures

Year	All raw materials		Agricultural materials			Fishery and wildlife products		
	Total	Total, except gold	Total	Crops	Live-stock	Total	Fishery products	Wildlife products
1961	21,194	21,805	12,643	4,427	8,216	362	231	131
1960	21,808	21,466	12,348	4,330	8,018	337	212	125
1959	21,712	21,399	12,351	4,375	7,976	335	217	118
1958	20,680	20,400	11,835	4,173	7,662	332	204	128
1957	20,903	20,756	11,808	4,134	7,674	338	202	136
1956	21,093	20,943	11,964	4,200	7,764	312	197	115
1955	20,233	20,087	11,596	4,133	7,463	296	180	116
1954	19,073	18,997	11,220	4,003	7,217	291	181	110
1953	19,360	19,284	11,228	4,103	7,125	293	174	119
1952	19,505	18,810	11,061	4,124	6,937	299	183	116
1951	18,123	18,536	10,933	4,162	6,771	284	165	119
1950	17,802	18,038	10,843	4,089	6,754	275	170	105
1949	17,321	16,638	10,334	3,882	6,452	280	159	121
1948	18,939	17,313	10,452	4,021	6,431	295	153	142
1947	18,544	16,912	10,603	4,035	6,568	254	129	125
1946	16,649	16,455	10,627	4,039	6,588	309	136	173
1945	16,377	16,441	10,630	4,004	6,626	256	129	127
1944	15,874	16,609	10,706	4,010	6,696	244	114	130
1943	16,017	15,904	10,108	3,769	6,339	217	97	120
1942	15,885	15,496	9,755	3,828	5,927	192	88	104
1941	16,323	15,298	9,568	3,982	5,586	253	109	144
1940	17,911	13,983	8,986	3,591	5,395	246	114	132
1939	16,339	13,004	8,630	3,475	5,155	221	125	96
1938	13,951	12,069	8,110	3,235	4,875	200	119	81
1937	14,591	13,047	8,426	3,516	4,910	237	129	108
1936	13,646	12,532	8,220	3,318	4,902	236	125	111
1935	13,215	11,641	7,822	3,251	4,571	204	110	94
1934	12,352	11,258	7,925	2,972	4,953	165	101	64
1933	10,816	10,978	7,807	2,934	4,873	165	94	71
1932	9,867	10,459	7,609	2,851	4,758	174	91	83
1931	11,140	11,343	7,870	3,071	4,799	196	101	95
1930	11,962	11,888	7,835	3,084	4,751	208	112	96
1929	12,784	12,609	7,982	3,207	4,775	214	117	97
1928	11,619	12,002	7,764	3,067	4,697	193	107	86
1927	12,110	11,965	7,731	3,013	4,718	173	102	71
1926	12,169	11,974	7,728	3,052	4,676	168	101	67
1925	11,652	11,557	7,553	2,966	4,587	155	92	63
1924	11,589	11,215	7,329	2,745	4,584	158	94	64
1923	12,016	11,650	7,475	2,904	4,571	144	79	65
1922	10,754	10,380	7,003	2,665	4,338	139	83	56
1921	9,985	9,104	6,043	2,040	4,003	135	89	46
1920	11,177	10,630	6,982	2,917	4,065	136	92	44
1919	9,818	9,840	6,615	2,550	4,065	129	89	40
1918	10,550	10,378	6,889	2,840	4,049	136	94	42
1917	11,375	10,128	6,616	2,796	3,820	150	104	46
1916	9,750	9,400	5,978	2,179	3,799	143	101	42
1915	9,449	9,255	6,168	2,410	3,758	154	100	54
1914	9,859	9,732	6,739	2,810	3,929	156	104	52
1913	9,452	9,302	6,118	2,345	3,773	145	92	53
1912	9,497	9,343	6,288	2,557	3,731	139	85	54
1911	9,280	9,048	6,127	2,399	3,728	144	90	54
1910	9,142	8,984	5,987	2,398	3,589	145	89	56
1909	8,898	8,728	5,961	2,390	3,571	143	87	56
1908	8,612	8,398	5,794	2,284	3,510	142	88	54
1907	8,608	8,433	5,580	2,186	3,394	141	87	54
1906	8,656	8,435	5,806	2,526	3,280	141	87	54
1905	8,206	8,072	5,544	2,277	3,267	141	88	53
1904	8,059	7,961	5,628	2,471	3,157	136	84	52
1903	7,674	7,557	5,197	2,121	3,076	137	84	53
1902	7,322	7,205	5,062	2,176	2,886	131	79	52
1901	6,960	6,849	4,750	1,885	2,865	131	79	52
1900	6,840	6,700	4,748	1,884	2,864	126	74	52

in Constant 1935-1939 Dollars, by Broad Product Groups: 1900-1961

in millions of dollars)

Forest products				Minerals								
Total	Sawlogs	Pulpwood	Other forest products	Total	Total, except gold	Iron and ferro-alloy metals	Other metals		Mineral fuels	Construction materials	Other non-metallic minerals	Year
							Total	Total, except gold				
1,003	475	249	279	7,186	7,797	351	-88	523	5,372	1,062	489	1961
1,005	483	252	270	8,118	7,776	441	871	529	5,283	1,039	484	1960
1,066	544	245	277	7,960	7,647	416	858	545	5,171	1,024	491	1959
960	485	225	250	7,553	7,273	383	856	576	4,940	944	430	1958
968	473	245	250	7,789	7,642	529	847	700	5,033	921	459	1957
1,067	551	262	254	7,750	7,600	500	849	699	5,047	879	475	1956
1,031	541	235	255	7,310	7,164	509	764	618	4,772	830	435	1955
974	524	212	238	6,588	6,512	428	655	579	4,353	744	408	1954
991	526	218	247	6,848	6,772	564	743	667	4,465	676	400	1953
987	530	212	245	7,158	6,463	435	1,350	655	4,327	665	381	1952
1,006	524	221	261	5,900	6,313	480	107	520	4,306	640	367	1951
999	554	192	253	5,685	5,921	416	361	597	4,004	579	325	1950
889	448	164	277	5,818	5,135	329	1,185	502	3,540	493	271	1949
978	517	187	274	7,214	5,588	376	2,102	476	3,946	503	287	1948
932	480	174	278	6,755	5,123	300	2,054	422	3,671	459	271	1947
892	469	158	265	4,821	4,627	274	532	338	3,380	397	238	1946
802	389	137	276	4,689	4,753	335	402	466	3,396	317	239	1945
857	454	129	274	4,067	4,802	358	-236	499	3,386	320	239	1944
862	472	122	268	4,830	4,717	402	709	596	3,126	369	224	1943
932	507	134	291	5,006	4,617	400	977	588	2,969	441	219	1942
957	504	130	323	5,545	4,520	355	1,665	640	2,911	420	194	1941
859	419	110	330	7,820	3,892	253	4,381	453	2,683	342	161	1940
828	384	106	338	6,660	3,325	180	3,656	321	2,360	328	136	1939
764	330	91	343	4,877	2,995	96	2,205	323	2,178	269	129	1938
833	382	112	339	5,095	3,551	232	1,940	396	2,476	292	155	1937
796	366	98	332	4,394	3,280	185	1,490	376	2,307	285	127	1936
718	299	84	335	4,471	2,897	107	2,026	452	2,043	187	108	1935
662	241	76	345	3,600	2,506	81	1,300	206	1,939	187	93	1934
647	220	75	352	2,197	2,359	66	37	199	1,847	158	89	1933
583	172	64	347	1,501	2,093	36	-481	111	1,717	165	64	1932
660	257	74	329	2,414	2,617	105	16	219	1,964	225	104	1931
789	382	81	326	3,130	3,056	193	291	217	2,220	296	130	1930
907	502	85	320	3,681	3,506	242	502	327	2,468	340	129	1929
866	473	79	314	2,796	3,179	199	-87	296	2,246	319	119	1928
881	487	75	319	3,325	3,180	205	417	272	2,276	317	110	1927
910	526	75	309	3,363	3,168	228	498	303	2,225	298	114	1926
923	545	65	313	3,021	2,926	213	362	267	2,063	280	103	1925
911	522	62	327	3,191	2,817	176	620	246	2,044	253	98	1924
946	549	61	336	3,451	3,085	217	648	282	2,235	242	109	1923
879	473	55	351	2,733	2,359	149	604	230	1,706	181	93	1922
800	386	40	374	3,007	2,126	83	1,013	132	1,695	145	71	1921
900	469	50	381	3,159	2,612	204	805	258	1,885	168	97	1920
881	463	41	377	2,193	2,215	183	176	198	1,608	141	85	1919
861	432	39	390	2,664	2,492	229	403	231	1,804	135	93	1918
906	485	40	381	3,703	2,456	228	1,488	241	1,722	170	95	1917
957	538	40	379	2,672	2,322	218	642	292	1,540	187	85	1916
906	497	38	371	2,221	2,027	158	402	208	1,418	174	69	1915
942	531	35	376	2,022	1,895	126	277	150	1,374	176	69	1914
970	567	34	369	2,219	2,069	187	324	174	1,447	184	77	1913
985	583	33	369	2,085	1,931	158	338	184	1,346	172	71	1912
969	555	32	382	2,040	1,808	129	393	161	1,283	166	69	1911
992	582	29	381	2,018	1,860	177	321	163	1,284	169	67	1910
987	587	27	373	1,807	1,637	157	333	163	1,097	160	60	1909
951	553	23	375	1,725	1,511	111	342	128	1,087	135	50	1908
1,001	603	27	371	1,886	1,711	162	318	143	1,202	145	59	1907
980	608	24	348	1,729	1,508	150	368	147	1,014	134	63	1906
939	575	20	344	1,582	1,448	134	264	130	998	130	56	1905
928	563	19	346	1,367	1,269	82	210	112	898	128	49	1904
911	544	18	349	1,429	1,312	123	235	118	900	124	47	1903
896	529	17	350	1,233	1,116	124	226	109	717	120	46	1902
875	503	15	357	1,204	1,093	108	219	108	726	107	44	1901
856	478	13	365	1,110	970	96	235	95	656	84	39	1900

Table A10.--Consumption of Crops and Livestock in the United States in Constant 1954 Dollars, by Food and Nonfood Use: 1924-1961

(All consumption figures in millions of dollars)

Year	All agricultural materials			Crops			Livestock		
	Total	Foods	Nonfoods	Total	Foods	Nonfoods	Total	Foods	Nonfoods
1961	29,855	25,824	4,031	12,305	9,274	3,031	17,550	16,550	1,000
1960	29,233	25,198	4,035	12,029	9,007	3,022	17,204	16,191	1,013
1959	29,156	24,955	4,201	12,095	8,943	3,152	17,061	16,012	1,049
1958	27,869	24,064	3,805	11,519	8,636	2,883	16,350	15,428	922
1957	27,911	24,035	3,876	11,424	8,481	2,943	16,487	15,554	933
1956	28,324	24,150	4,174	11,550	8,417	3,133	16,774	15,733	1,041
1955	27,455	23,368	4,087	11,299	8,216	3,083	16,156	15,152	1,004
1954	26,458	22,639	3,819	10,963	8,010	2,953	15,495	14,629	866
1953	26,732	22,567	4,165	11,383	8,225	3,158	15,349	14,342	1,007
1952	26,218	22,071	4,147	11,331	8,184	3,147	14,887	13,887	1,000
1951	25,964	21,596	4,368	11,461	8,112	3,349	14,503	13,484	1,019
1950	25,766	21,224	4,542	11,218	7,897	3,321	14,548	13,327	1,221
1949	24,748	20,925	3,823	10,816	8,009	2,807	13,932	12,916	1,016
1948	25,011	20,677	4,334	11,062	7,921	3,141	13,949	12,756	1,193
1947	25,274	21,094	4,180	10,981	7,921	3,060	14,293	13,173	1,120
1946	25,377	20,998	4,379	11,103	7,944	3,159	14,274	13,054	1,220
1945	25,413	21,255	4,158	11,123	8,096	3,027	14,290	13,159	1,131
1944	25,670	21,421	4,249	11,061	7,952	3,109	14,609	13,469	1,140
1943	24,033	19,733	4,300	10,285	7,085	3,200	13,748	12,648	1,100
1942	23,401	19,040	4,361	10,472	7,265	3,207	12,929	11,775	1,154
1941	23,026	18,532	4,494	10,740	7,447	3,293	12,286	11,085	1,201
1940	21,565	17,909	3,656	9,736	7,077	2,659	11,829	10,832	997
1939	20,744	17,312	3,432	9,465	7,012	2,453	11,279	10,300	979
1938	19,427	16,482	2,945	8,757	6,658	2,099	10,670	9,824	846
1937	20,097	16,583	3,514	9,370	6,841	2,529	10,727	9,742	985
1936	19,761	16,344	3,417	9,008	6,591	2,417	10,753	9,753	1,000
1935	18,722	15,754	2,968	8,727	6,693	2,034	9,995	9,061	934
1934	18,819	16,051	2,768	7,882	5,962	1,920	10,937	10,089	848
1933	18,589	15,755	2,834	7,900	5,976	1,924	10,689	9,779	910
1932	18,019	15,605	2,414	7,609	5,994	1,615	10,410	9,611	799
1931	18,662	15,921	2,741	8,167	6,333	1,834	10,495	9,588	907
1930	18,472	15,699	2,773	8,124	6,225	1,899	10,348	9,474	874
1929	18,919	15,686	3,233	8,479	6,277	2,202	10,440	9,409	1,031
1928	18,353	15,339	3,014	8,092	6,023	2,069	10,261	9,316	945
1927	18,353	15,216	3,137	8,042	5,864	2,178	10,311	9,352	959
1926	18,395	15,428	2,967	8,145	6,134	2,011	10,250	9,294	956
1925	17,849	14,952	2,897	7,764	5,801	1,963	10,085	9,151	934
1924	17,428	14,870	2,558	7,322	5,624	1,698	10,106	9,246	860

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961

(All production, import, export, and consumption figures in millions of dollars)

Year	Minerals, total				Iron and ferroalloy metals							
					Iron and ferroalloy metals, total				Iron			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	15,445	3,696	1,927	17,214	621	686	328	979	490	227	213	504
1960	15,372	4,018	1,147	18,243	780	713	302	1,191	640	288	193	735
1959	14,840	3,912	833	17,919	552	777	173	1,156	435	316	132	619
1958	14,288	3,804	1,022	17,070	605	614	159	1,060	485	221	126	580
1957	15,551	4,055	1,729	17,877	895	876	280	1,491	742	251	231	762
1956	15,510	3,696	1,340	17,866	861	838	283	1,416	684	235	207	712
1955	14,688	3,280	1,077	16,891	898	761	226	1,433	718	178	178	718
1954	13,302	2,873	926	15,249	691	675	151	1,215	541	124	114	551
1953	13,855	3,039	877	16,017	947	759	129	1,577	811	106	99	818
1952	13,533	3,450	1,041	15,942	775	583	143	1,215	671	88	124	635
1951	13,677	2,379	1,628	14,431	900	522	118	1,304	806	115	106	815
1950	12,344	2,679	1,223	13,801	740	516	100	1,156	662	89	86	665
1949	11,064	2,775	870	12,969	642	405	131	916	580	69	117	532
1948	12,574	3,739	1,136	15,177	760	430	143	1,047	680	51	122	609
1947	12,029	3,430	1,448	14,011	712	352	231	833	639	35	213	461
1946	10,754	1,724	1,159	11,319	561	338	122	777	489	20	111	398
1945	10,883	1,682	1,187	11,378	718	330	121	927	621	11	110	522
1944	11,253	1,582	2,134	11,701	784	382	160	1,006	653	6	139	520
1943	10,835	1,571	1,011	11,395	876	412	173	1,115	707	5	147	565
1942	10,533	1,748	802	11,479	888	391	172	1,107	737	7	147	597
1941	9,965	2,766	718	12,013	749	395	153	991	644	17	138	523
1940	9,104	5,498	923	13,679	599	310	202	707	511	18	181	348
1939	8,179	4,424	1,008	11,595	427	190	127	490	356	20	106	270
1938	7,344	2,740	966	9,118	247	124	110	261	192	17	90	119
1937	8,584	2,606	975	10,215	572	228	156	644	500	23	127	396
1936	7,643	2,072	699	9,016	388	201	74	515	339	24	57	306
1935	6,497	2,702	667	8,532	247	123	69	301	211	16	56	171
1934	6,021	1,814	695	7,140	194	92	62	224	169	14	51	132
1933	5,621	935	1,117	5,439	133	81	30	184	120	11	24	107
1932	5,130	912	1,697	4,345	75	38	15	98	67	9	12	64
1931	6,282	1,090	1,328	6,044	233	79	29	283	213	16	24	205
1930	7,478	961	1,032	7,407	429	141	50	520	402	26	47	381
1929	8,500	1,406	1,233	8,673	537	195	75	657	502	30	72	460
1928	7,805	1,188	1,748	7,245	460	146	70	536	428	27	67	388
1927	7,865	1,054	1,071	7,848	466	133	51	548	426	27	49	404
1926	7,799	1,122	1,019	7,902	511	142	46	607	468	32	45	455
1925	7,230	1,076	1,061	7,245	474	131	37	568	429	27	34	422
1924	6,947	1,268	953	7,262	403	101	36	468	371	21	34	358
1923	7,467	1,250	817	7,900	517	93	41	569	481	28	39	470
1922	5,475	1,295	606	6,164	347	86	38	395	323	15	34	304
1921	5,092	1,629	608	6,113	205	54	38	221	202	4	38	168
1920	6,333	1,490	847	6,076	503	127	81	549	466	14	80	400
1919	5,512	819	922	5,409	442	127	74	495	418	7	71	354
1918	6,409	788	875	6,322	575	158	98	635	479	7	85	401
1917	6,382	2,086	1,088	7,380	590	147	117	620	516	11	99	428
1916	5,992	851	788	6,055	567	134	114	587	512	12	95	429
1915	5,289	507	673	5,123	403	87	71	419	379	12	56	335
1914	4,949	475	709	4,715	294	79	41	332	282	13	27	268
1913	5,352	593	758	5,187	438	113	63	488	427	21	47	401
1912	5,001	521	659	4,863	392	83	64	411	381	17	51	347
1911	4,733	533	604	4,662	314	72	50	336	305	15	37	283
1910	4,766	497	556	4,707	411	85	36	460	398	24	28	394
1909	4,266	451	534	4,183	373	61	28	406	360	16	22	354
1908	3,972	469	535	3,906	261	50	22	289	252	8	17	243
1907	4,366	429	442	4,353	379	64	26	417	366	16	22	360
1906	3,894	452	397	3,949	347	69	27	389	339	15	22	332
1905	3,752	364	437	3,679	311	59	22	348	303	11	17	297
1904	3,310	348	490	3,168	202	34	22	214	196	7	19	184
1903	3,288	369	344	3,313	255	73	7	321	251	22	6	267
1902	2,876	372	370	2,878	260	72	8	324	256	25	7	274
1901	2,774	392	377	2,789	214	100	14	300	208	10	11	207
1900	2,586	308	330	2,564	204	77	21	260	199	9	18	190

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Iron and ferroalloy metals--Continued											
	Ferroalloy metals											
	All ferroalloy metals				Manganese				Tungsten			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	131	459	115	475	8	188	1	195	30	12	2	40
1960	140	425	109	456	15	183	1	197	27	25	7	45
1959	117	461	41	537	23	150	1	172	13	25	2	36
1958	120	393	33	480	30	138	1	167	14	27	1	40
1957	153	625	49	729	39	221	1	259	20	56	2	74
1956	177	603	76	704	36	185	1	220	53	85	4	134
1955	180	583	48	715	37	177	1	213	60	83	3	140
1954	150	551	37	664	26	170	1	195	50	96	2	144
1953	136	653	30	759	34	237	1	270	35	110	1	144
1952	140	495	19	580	26	170	1	195	28	68	2	94
1951	94	407	12	489	26	158	1	183	23	31	2	52
1950	78	427	14	491	28	155	1	182	18	68	2	84
1949	62	336	14	384	26	111	1	136	10	26	3	33
1948	80	379	21	438	34	120	3	151	15	32	6	41
1947	73	317	18	372	31	106	3	134	11	28	2	37
1946	72	318	11	379	32	118	2	148	19	33	1	51
1945	97	319	11	405	40	102	(Z)	142	20	20	3	37
1944	131	376	21	486	49	98	(Z)	147	37	70	8	99
1943	169	407	26	550	50	113	2	161	43	74	4	113
1942	151	384	25	510	50	120	1	169	34	55	2	87
1941	105	378	15	468	36	128	1	163	24	44	1	67
1940	88	292	21	359	32	109	2	139	19	27	1	45
1939	71	170	21	220	24	63	(Z)	87	16	8	1	23
1938	55	107	20	142	8	45	(Z)	53	11	4	1	14
1937	72	205	29	248	28	82	(Z)	110	13	24	1	36
1936	49	177	17	209	21	77	(Z)	98	9	17	(Z)	26
1935	36	107	13	130	15	38	(Z)	53	9	7	3	13
1934	25	78	11	92	8	33	(Z)	41	8	5	2	11
1933	13	70	6	77	4	31	(Z)	35	3	3	3	3
1932	8	29	3	34	3	11	(Z)	14	1	(Z)	(Z)	1
1931	20	63	5	78	12	28	(Z)	40	5	1	3	3
1930	27	115	3	139	21	46	1	66	3	16	(Z)	19
1929	35	165	3	197	27	66	(Z)	93	3	25	(Z)	28
1928	32	119	3	148	23	55	1	77	4	10	(Z)	14
1927	40	106	2	144	32	59	(Z)	91	4	9	(Z)	13
1926	43	110	1	152	36	60	(Z)	96	5	12	(Z)	17
1925	45	104	3	146	39	60	1	98	4	7	(Z)	11
1924	32	80	2	110	29	49	(Z)	78	2	1	(Z)	3
1923	36	65	2	99	36	30	1	65	1	(Z)	(Z)	1
1922	24	71	4	91	23	45	(Z)	68	(Z)	10	(Z)	10
1921	3	50	(Z)	53	4	35	(Z)	39	(Z)	8	(Z)	8
1920	37	113	1	149	36	59	(Z)	95	1	14	(Z)	15
1919	24	120	3	141	22	54	1	75	1	38	(Z)	39
1918	96	151	13	234	71	51	1	121	18	46	4	60
1917	74	136	18	192	48	64	(Z)	112	22	19	7	34
1916	55	122	19	158	30	52	(Z)	82	21	16	2	35
1915	24	75	15	84	14	27	(Z)	41	8	7	1	14
1914	12	66	14	64	8	37	(Z)	45	4	3	(Z)	7
1913	11	92	16	87	6	51	(Z)	57	5	6	(Z)	11
1912	11	66	13	64	5	27	(Z)	32	5	5	(Z)	10
1911	9	57	13	53	5	33	(Z)	38	4	1	(Z)	5
1910	13	61	8	66	7	32	(Z)	39	7	6	(Z)	13
1909	13	45	6	52	7	23	(Z)	30	6	6	(Z)	12
1908	9	42	5	46	6	27	(Z)	33	3	3	(Z)	6
1907	13	48	4	57	7	33	(Z)	40	6	1	(Z)	7
1906	8	54	5	57	5	30	(Z)	35	3	(Z)	(Z)	3
1905	8	48	5	51	5	25	(Z)	30	3	(Z)	(Z)	3
1904	6	27	3	30	3	14	(Z)	17	3	(Z)	(Z)	3
1903	4	51	1	54	3	26	(Z)	29	1	(Z)	(Z)	1
1902	4	47	1	50	3	24	(Z)	27	1	(Z)	(Z)	1
1901	6	90	3	93	5	13	(Z)	18	1	(Z)	(Z)	1
1900	5	68	3	70	5	30	(Z)	35	(Z)	(Z)	(Z)	...

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Other metals											
	Other metals, total				Gold				Silver			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	771	782	1,093	460	53	49	782	-680	29	40	35	34
1960	733	1,109	310	1,532	58	324	2	380	26	52	23	55
1959	610	1,042	129	1,523	56	295	2	349	27	51	8	70
1958	685	1,104	246	1,543	61	282	31	312	29	141	2	168
1957	803	1,245	406	1,642	62	268	167	163	33	175	9	199
1956	805	1,066	185	1,686	63	130	26	167	33	138	5	166
1955	745	948	159	1,534	65	102	6	161	32	72	4	100
1954	668	887	190	1,365	64	38	17	85	31	77	1	107
1953	735	971	126	1,580	68	47	30	85	32	69	1	100
1952	767	1,646	149	2,264	66	735	27	774	34	64	2	96
1951	735	704	718	721	69	81	610	-460	34	69	5	98
1950	730	1,028	611	1,147	83	162	509	-264	36	92	4	124
1949	625	1,507	185	1,947	69	767	76	760	30	81	3	108
1948	669	2,558	299	2,928	70	1,922	182	1,810	32	72	1	103
1947	675	2,455	324	2,806	73	1,927	183	1,817	30	71	24	77
1946	515	812	317	1,010	55	380	219	216	20	53	34	39
1945	606	821	354	1,073	33	93	197	-71	25	43	84	-16
1944	805	761	1,211	355	35	100	953	-818	29	44	117	-44
1943	932	765	235	1,462	47	101	24	124	35	54	30	59
1942	915	1,071	133	1,853	120	313	(Z)	433	46	92	1	137
1941	870	1,930	105	2,695	165	976	(Z)	1,141	57	114	7	164
1940	819	4,839	229	5,429	169	4,204	1	4,372	60	141	8	193
1939	712	3,965	237	4,440	163	3,550	1	3,712	55	103	19	139
1938	602	2,389	216	2,775	148	1,953	6	2,095	53	209	3	259
1937	765	2,080	219	2,626	143	1,621	46	1,718	61	134	3	192
1936	616	1,610	159	2,067	132	1,135	27	1,240	52	202	3	251
1935	465	2,348	149	2,664	113	1,641	2	1,752	41	443	5	479
1934	352	1,520	219	1,653	97	1,175	55	1,217	28	149	19	158
1933	293	673	705	261	80	321	582	-181	20	138	37	121
1932	307	626	1,321	-388	81	462	1,202	-659	19	50	36	33
1931	480	706	856	330	77	347	651	-227	25	69	70	24
1930	628	434	425	637	74	135	127	82	41	85	112	14
1929	801	788	555	1,034	72	307	184	195	52	93	122	23
1928	751	695	1,113	333	75	201	702	-426	49	98	124	23
1927	724	629	489	864	73	180	93	160	51	82	110	23
1926	758	635	391	1,002	78	157	16	219	53	92	120	25
1925	745	632	576	801	80	204	179	105	57	78	117	18
1924	704	815	461	1,058	85	377	46	416	54	92	134	12
1923	667	780	333	1,114	84	357	34	407	60	94	91	63
1922	508	742	264	986	80	347	10	417	52	86	71	67
1921	346	1,175	216	1,305	82	905	6	981	39	74	59	54
1920	587	981	302	1,266	83	592	66	609	48	65	73	40
1919	575	476	525	526	96	84	205	-25	44	63	169	-62
1918	803	472	430	845	112	94	14	192	58	58	209	-93
1917	850	1,788	613	2,025	136	1,428	176	1,388	60	62	129	-7
1916	890	591	344	1,137	154	263	27	390	67	47	85	29
1915	752	309	313	748	165	82	32	215	62	45	81	26
1914	632	284	390	526	154	62	74	142	59	42	77	24
1913	644	365	393	616	150	89	72	167	60	54	97	17
1912	636	347	337	646	155	64	47	172	56	63	96	23
1911	599	384	308	675	163	98	2	259	52	68	101	19
1910	576	334	317	593	159	64	48	175	49	67	89	27
1909	590	324	306	608	167	62	39	190	49	68	89	28
1908	515	371	320	566	154	155	71	238	43	63	78	28
1907	494	297	232	559	147	90	42	195	45	47	59	33
1906	530	310	209	631	164	94	12	246	49	41	76	14
1905	503	246	261	488	148	55	54	149	48	35	65	18
1904	471	261	331	401	136	82	108	110	48	35	69	14
1903	423	227	208	442	124	51	45	130	46	33	67	12
1902	423	234	241	416	135	61	65	131	47	38	69	16
1901	402	235	228	409	132	65	75	122	47	43	80	10
1900	403	181	181	403	133	23	(Z)	156	49	42	74	17

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Other metals--Continued											
	Copper				Lead				Zinc			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961.............	519	263	219	563	55	88	3	140	53	60	8	105
1960.............	483	314	237	560	52	80	2	130	50	67	11	106
1959.............	369	237	82	524	54	91	2	143	49	70	4	115
1958.............	438	210	192	456	56	131	2	185	47	83	2	128
1957.............	486	288	194	580	71	124	3	192	61	109	3	167
1956.............	494	275	127	642	74	106	3	177	62	84	4	142
1955.............	447	283	117	613	71	96	2	165	59	69	5	123
1954.............	374	282	138	518	69	103	2	170	54	76	6	124
1953.............	414	312	74	652	72	97	2	167	63	80	3	140
1952.............	414	300	93	621	82	136	2	216	76	80	9	147
1951.............	415	250	73	592	82	49	2	129	78	38	7	109
1950.............	407	291	81	617	91	120	2	209	71	47	3	115
1949.............	337	259	91	505	87	88	1	174	68	33	9	92
1948.............	374	218	99	493	82	70	(Z)	152	72	32	10	94
1947.............	379	203	92	490	81	48	1	128	73	40	16	97
1946.............	272	159	48	383	71	29	1	99	66	35	8	93
1945.............	346	401	63	684	82	70	2	150	70	51	3	118
1944.............	435	342	110	667	88	71	5	154	82	55	4	133
1943.............	488	330	136	682	96	71	2	165	85	70	13	142
1942.............	483	350	100	733	105	111	2	214	88	48	17	119
1941.............	429	322	75	676	97	92	5	184	86	32	12	106
1940.............	393	163	195	361	96	28	6	118	76	14	11	79
1939.............	326	103	193	236	87	20	17	90	67	9	2	74
1938.............	250	92	191	151	78	8	11	75	59	2	1	60
1937.............	377	103	158	322	98	4	5	97	72	5	1	76
1936.............	275	82	118	239	79	4	5	78	66	2	1	67
1935.............	170	108	136	142	70	4	2	72	59	2	1	60
1934.............	106	90	140	56	61	4	2	63	50	2	2	50
1933.............	85	57	78	64	57	7	6	58	44	1	1	44
1932.............	107	24	74	57	62	7	6	63	33	1	1	33
1931.............	237	131	125	243	85	8	6	87	47	1	1	47
1930.............	315	91	169	237	118	16	12	122	68	1	3	66
1929.............	446	161	224	383	137	21	17	141	83	3	5	81
1928.............	405	176	252	329	132	36	26	142	80	3	6	77
1927.............	369	161	241	289	140	35	28	147	82	2	13	71
1926.............	386	174	216	344	144	26	16	154	89	2	19	72
1925.............	375	146	235	286	144	25	23	146	81	2	20	63
1924.............	359	172	250	281	125	26	19	132	73	(Z)	11	62
1923.............	331	150	186	295	115	15	12	118	70	1	9	62
1922.............	216	120	166	170	101	20	9	112	54	2	6	50
1921.............	104	78	141	41	87	22	7	102	29	3	1	31
1920.............	274	108	140	242	105	23	7	121	67	2	14	55
1919.............	271	96	116	251	91	15	14	92	63	1	18	46
1918.............	427	129	168	388	119	13	23	109	73	4	14	63
1917.............	424	124	255	293	132	9	21	120	82	12	28	66
1916.............	449	103	178	374	127	4	26	105	81	14	25	70
1915.............	333	71	154	250	114	11	29	96	67	7	16	58
1914.............	257	69	208	118	107	7	19	95	48	2	11	39
1913.............	276	91	208	159	102	12	11	103	47	3	5	45
1912.............	279	92	174	197	93	17	16	94	44	4	5	43
1911.............	249	75	176	148	90	25	23	92	38	3	6	35
1910.............	243	77	159	161	81	19	16	84	37	3	5	35
1909.............	252	72	153	171	81	23	19	85	35	5	4	36
1908.............	214	49	148	115	69	18	17	70	27	4	5	26
1907.............	190	57	114	133	77	16	11	82	29	4	5	28
1906.............	205	51	102	154	75	19	11	83	29	4	7	26
1905.............	199	47	120	126	69	20	13	76	30	2	5	27
1904.............	182	41	124	99	67	23	19	71	27	(Z)	6	21
1903.............	156	38	69	125	63	23	18	68	23	(Z)	5	18
1902.............	148	32	79	101	60	20	17	63	23	(Z)	7	16
1901.............	135	31	43	123	58	23	21	60	21	(Z)	5	16
1900.............	136	23	76	83	58	23	21	60	19	(Z)	7	12

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Other metals--Continued								Mineral fuels							
	Bauxite				All other metals				Mineral fuels, total				Coal			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961...........	10	102	10	102	52	180	35	197	11,451	1,947	367	13,031	1,978	3	176	1,805
1960...........	15	95	13	97	49	179	23	205	11,325	1,902	398	12,829	2,060	4	182	1,882
1959...........	15	92	6	101	41	206	26	221	11,207	1,777	411	12,573	2,061	5	188	1,878
1958...........	13	89	3	99	43	168	15	196	10,704	1,825	506	12,023	2,057	4	252	1,809
1957...........	16	79	4	91	74	202	27	249	11,549	1,634	928	12,255	2,468	4	391	2,081
1956...........	15	66	3	78	64	267	19	312	11,551	1,508	759	12,300	2,536	5	362	2,179
1955...........	16	57	2	71	56	270	23	303	10,905	1,303	593	11,615	2,347	4	265	2,086
1954...........	16	57	2	71	60	256	24	292	9,993	1,087	491	10,589	2,039	3	169	1,873
1953...........	16	53	1	68	70	315	16	369	10,366	1,064	548	10,882	2,354	4	181	2,177
1952...........	17	37	1	53	78	293	17	354	10,233	981	675	10,539	2,481	6	262	2,225
1951...........	14	31	2	43	44	186	19	211	10,346	866	711	10,501	2,804	5	316	2,493
1950...........	12	31	2	41	30	286	11	305	9,342	865	438	9,769	2,737	6	153	2,590
1949...........	11	29	2	38	24	251	5	270	8,459	670	484	8,645	2,367	4	173	2,198
1948...........	12	28	3	37	27	217	5	239	9,762	530	630	9,662	3,229	3	272	2,960
1947...........	10	18	3	25	28	149	5	172	9,357	457	830	8,984	3,371	3	393	2,981
1946...........	10	10	2	18	22	147	4	165	8,523	405	663	8,265	2,958	2	252	2,708
1945...........	10	18	2	26	39	146	4	181	8,595	373	666	8,302	3,110	3	167	2,946
1944...........	25	8	8	25	110	140	16	234	8,711	288	725	8,274	3,377	5	160	3,222
1943...........	54	18	9	63	127	121	22	226	8,012	190	566	7,636	3,216	6	159	3,063
1942...........	22	12	4	30	50	145	9	186	7,596	116	465	7,247	3,179	5	148	3,036
1941...........	8	11	2	17	28	383	3	408	7,260	283	417	7,126	2,832	4	127	2,709
1940...........	4	6	2	8	20	283	7	296	6,789	239	452	6,576	2,547	5	102	2,450
1939...........	3	5	2	6	11	174	4	181	6,204	177	604	5,777	2,246	6	79	2,173
1938...........	3	4	1	6	11	122	4	129	5,781	156	604	5,333	1,987	6	67	1,926
1937...........	4	5	2	7	11	209	4	216	6,458	170	559	6,069	2,480	8	79	2,409
1936...........	4	3	1	6	10	182	4	188	5,905	170	431	5,644	2,474	10	67	2,417
1935...........	2	2	2	2	9	149	1	157	5,254	160	418	4,996	2,149	8	62	2,095
1934...........	2	2	1	3	9	99	1	107	4,965	148	382	4,731	2,132	7	66	2,073
1933...........	1	2	(Z)	3	5	147	1	151	4,742	132	352	4,522	1,949	7	54	1,902
1932...........	1	2	(Z)	3	5	80	1	84	4,309	214	340	4,183	1,843	8	56	1,795
1931...........	2	3	1	4	7	147	1	153	4,942	247	414	4,775	2,257	8	75	2,190
1930...........	3	4	1	6	9	102	1	110	5,602	302	522	5,382	2,731	9	99	2,641
1929...........	3	4	2	5	9	199	2	206	6,249	311	559	6,001	3,077	10	115	2,972
1928...........	3	4	1	6	8	178	1	185	5,739	254	531	5,462	2,934	9	108	2,835
1927...........	3	4	1	6	5	166	3	168	5,830	206	496	5,540	3,052	7	115	2,944
1926...........	4	4	1	7	5	180	2	183	5,725	239	555	5,409	3,344	13	201	3,156
1925...........	3	4	1	6	4	175	2	177	5,237	226	418	5,045	2,906	9	112	2,803
1924...........	3	2	1	4	4	146	1	149	5,137	268	431	4,974	2,964	6	115	2,855
1923...........	5	2	1	6	3	163	2	164	5,580	290	417	5,453	3,380	13	148	3,245
1922...........	3	1	(Z)	4	3	166	2	167	4,065	404	280	4,189	2,398	27	82	2,343
1921...........	1	1	(Z)	2	3	92	2	93	4,091	363	335	4,119	2,676	6	147	2,535
1920...........	5	1	(Z)	6	5	190	2	193	4,710	308	435	4,583	3,366	7	227	3,146
1919...........	3	(Z)	(Z)	3	7	216	3	220	4,041	156	306	3,891	2,884	6	138	2,752
1918...........	6	(Z)	1	5	10	174	1	183	4,581	115	334	4,362	3,494	7	152	3,349
1917...........	5	(Z)	(Z)	5	11	153	4	160	4,408	95	345	4,158	3,375	7	167	3,215
1916...........	4	(Z)	1	3	9	159	2	166	3,971	66	319	3,718	3,047	9	143	2,913
1915...........	3	(Z)	(Z)	3	9	95	1	103	3,638	62	282	3,418	2,785	10	124	2,671
1914...........	2	1	(Z)	3	6	103	(Z)	109	3,515	53	261	3,307	2,710	9	111	2,608
1913...........	2	1	(Z)	3	6	116	(Z)	122	3,725	43	281	3,487	2,971	10	137	2,844
1912...........	2	1	(Z)	3	7	108	(Z)	115	3,460	25	242	3,243	2,780	10	114	2,676
1911...........	1	(Z)	(Z)	1	6	116	...	122	3,298	13	230	3,081	2,630	8	110	2,528
1910...........	1	(Z)	(Z)	1	6	104	1	109	3,267	13	191	3,089	2,630	12	89	2,553
1909...........	1	(Z)	(Z)	1	6	95	2	99	2,808	9	188	2,629	2,247	8	82	2,173
1908...........	1	(Z)	(Z)	1	6	80	1	85	2,773	10	181	2,602	2,234	9	76	2,167
1907...........	1	(Z)	(Z)	1	6	84	1	89	3,043	13	172	2,884	2,538	12	84	2,466
1906...........	1	(Z)	(Z)	1	8	102	2	108	2,571	11	151	2,431	2,178	10	65	2,123
1905...........	(Z)	(Z)	(Z)	(Z)	9	87	3	93	2,518	11	143	2,386	2,106	11	60	2,057
1904...........	(Z)	(Z)	(Z)	(Z)	11	81	5	87	2,260	10	126	2,144	1,901	10	56	1,855
1903...........	(Z)	(Z)	(Z)	(Z)	10	82	4	88	2,243	20	118	2,145	1,932	20	54	1,898
1902...........	(Z)	(Z)	(Z)	(Z)	10	83	3	90	1,820	16	110	1,726	1,543	16	38	1,521
1901...........	(Z)	(Z)	(Z)	(Z)	9	73	3	79	1,832	11	122	1,721	1,611	11	49	1,573
1900...........	(Z)	(Z)	(Z)	(Z)	8	70	2	76	1,664	11	117	1,558	1,462	11	50	1,423

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Mineral fuels--Continued											
	Oil and gas field products, total				Crude petroleum				Natural gas			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	9,473	1,944	191	11,226	7,267	1,921	179	9,009	1,442	23	7	1,458
1960	9,265	1,898	216	10,947	7,137	1,882	204	8,815	1,405	16	8	1,413
1959	9,146	1,772	223	10,695	7,136	1,756	211	8,681	1,325	16	9	1,332
1958	8,647	1,821	254	10,214	6,787	1,808	239	8,356	1,213	13	11	1,215
1957	9,081	1,630	537	10,174	7,253	1,627	519	8,361	1,175	3	11	1,167
1956	9,015	1,503	397	10,121	7,253	1,502	380	8,375	1,109	1	10	1,100
1955	8,558	1,299	328	9,529	6,886	1,298	311	7,873	1,034	1	10	1,025
1954	7,954	1,084	322	8,716	6,416	1,083	304	7,195	962	1	11	952
1953	8,012	1,060	367	8,705	6,533	1,059	350	7,242	924	1	10	915
1952	7,752	975	413	8,314	6,347	974	395	6,926	881	1	10	872
1951	7,542	861	395	8,008	6,230	861	373	6,718	820	(Z)	14	806
1950	6,605	859	285	7,179	5,469	859	264	6,064	691	(Z)	16	675
1949	6,092	666	311	6,447	5,105	666	280	5,491	596	...	16	580
1948	6,533	527	358	6,702	5,599	527	327	5,799	566	...	17	549
1947	5,986	454	437	6,003	5,147	454	404	5,197	504	...	16	488
1946	5,565	403	411	5,557	4,805	403	386	4,822	457	...	14	443
1945	5,485	370	499	5,356	4,749	370	485	4,634	445	...	10	435
1944	5,334	283	565	5,052	4,650	283	552	4,381	420	...	10	410
1943	4,796	184	407	4,573	4,173	184	398	3,959	387	...	7	380
1942	4,417	111	317	4,211	3,843	111	305	3,649	346	...	8	338
1941	4,427	279	289	4,417	3,886	279	274	3,891	318	...	11	307
1940	4,242	234	350	4,126	3,750	234	331	3,653	301	...	13	288
1939	3,958	171	525	3,604	3,506	171	497	3,180	279	(Z)	15	264
1938	3,794	150	537	3,407	3,366	150	505	3,011	259	(Z)	13	246
1937	3,978	162	480	3,660	3,545	162	454	3,253	272	(Z)	14	258
1936	3,431	160	364	3,227	3,047	160	345	2,862	245	(Z)	13	232
1935	3,105	152	356	2,901	2,762	152	340	2,574	217	(Z)	11	206
1934	2,833	141	316	2,658	2,516	141	301	2,356	200	(Z)	10	190
1933	2,793	125	298	2,620	2,510	125	281	2,354	176	(Z)	12	164
1932	2,466	206	284	2,388	2,177	206	275	2,108	175	(Z)	8	167
1931	2,685	239	339	2,585	2,359	239	332	2,266	189	(Z)	7	182
1930	2,871	293	423	2,741	2,489	293	416	2,366	218	(Z)	7	211
1929	3,172	301	444	3,029	2,792	301	437	2,656	215	...	7	208
1928	2,805	247	423	2,627	2,498	245	417	2,326	173	...	6	167
1927	2,778	199	381	2,596	2,498	199	376	2,321	159	...	5	154
1926	2,381	226	354	2,253	2,136	226	351	2,011	144	...	3	141
1925	2,331	217	306	2,242	2,117	217	302	2,032	131	...	4	127
1924	2,173	262	316	2,119	1,978	262	313	1,927	126	...	3	123
1923	2,201	277	270	2,208	2,030	277	267	2,040	111	...	3	108
1922	1,667	377	198	1,846	1,545	377	197	1,725	84	...	1	83
1921	1,415	357	188	1,584	1,309	357	187	1,479	73	...	1	72
1920	1,344	302	209	1,437	1,228	302	208	1,322	88	...	1	87
1919	1,157	150	168	1,139	1,049	150	167	1,032	82	...	1	81
1918	1,087	108	182	1,013	987	108	182	913	79	...	(Z)	79
1917	1,033	88	178	943	930	88	178	840	87	...	(Z)	87
1916	924	57	176	805	833	57	176	714	83	...	(Z)	83
1915	853	52	158	747	779	52	158	673	69	...	(Z)	69
1914	805	44	150	699	737	44	150	631	65	...	(Z)	65
1913	754	33	144	643	688	33	143	578	64	...	1	63
1912	680	15	128	567	617	15	127	505	62	...	1	61
1911	668	5	120	553	611	5	119	497	56	...	1	55
1910	637	1	102	536	581	1	101	481	56	...	1	55
1909	561	1	106	456	508	1	105	404	53	(Z)	1	52
1908	539	1	105	435	495	1	104	392	44	(Z)	1	43
1907	505	1	88	418	460	1	87	374	45	(Z)	1	44
1906	394	(Z)	86	308	351	(Z)	85	266	43	(Z)	1	42
1905	412	(Z)	83	329	373	(Z)	82	291	39	(Z)	1	38
1904	359	(Z)	70	289	325	(Z)	70	255	34	(Z)	(Z)	34
1903	311	(Z)	64	247	278	(Z)	64	214	33	(Z)	(Z)	33
1902	277	(Z)	72	205	246	(Z)	72	174	31	(Z)	(Z)	31
1901	221	(Z)	73	148	192	(Z)	73	119	29	(Z)	(Z)	29
1900	202	(Z)	67	135	176	(Z)	67	109	26	(Z)	(Z)	26

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Mineral fuels--Continued				Construction materials							
	Natural gas liquids				Construction materials, total				Dimension stone			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	764	...	5	759	1,773	82	4	1,851	64	1	(Z)	65
1960	723	...	4	719	1,734	90	6	1,818	60	1	(Z)	61
1959	685	...	3	682	1,704	96	5	1,795	65	1	(Z)	66
1958	647	...	4	643	1,594	80	4	1,670	64	1	(Z)	65
1957	653	...	7	646	1,546	92	4	1,634	63	1	(Z)	64
1956	653	...	7	646	1,498	87	5	1,580	63	1	1	64
1955	638	...	7	631	1,417	90	4	1,503	67	1	1	67
1954	577	...	7	570	1,271	79	4	1,346	63	1	1	63
1953	555	...	7	548	1,155	79	4	1,230	54	1	1	54
1952	524	...	8	516	1,137	80	5	1,212	52	1	1	52
1951	492	...	8	484	1,089	88	4	1,173	53	1	1	53
1950	445	...	5	440	984	81	4	1,061	53	1	1	53
1949	391	...	15	376	859	59	5	913	47	(Z)	1	46
1948	368	...	14	354	880	73	4	949	50	(Z)	1	49
1947	335	...	17	318	800	66	4	862	43	1	1	43
1946	303	...	11	292	698	50	4	744	41	(Z)	1	40
1945	291	...	4	287	552	39	4	587	29	(Z)	1	28
1944	264	...	3	261	547	39	3	583	21	(Z)	1	20
1943	236	...	2	234	629	44	2	671	24	(Z)	1	23
1942	228	...	4	224	765	42	2	805	40	(Z)	1	39
1941	223	...	4	219	743	46	3	786	59	(Z)	1	58
1940	191	...	6	185	619	30	2	647	59	(Z)	1	58
1939	173	...	13	160	601	29	2	628	66	(Z)	1	65
1938	169	...	19	150	494	22	1	515	53	(Z)	1	52
1937	161	...	12	149	535	35	2	568	58	(Z)	1	57
1936	139	...	6	133	515	27	1	541	55	(Z)	(Z)	55
1935	126	...	5	121	349	19	1	367	42	(Z)	(Z)	42
1934	117	...	5	112	349	14	1	362	41	(Z)	(Z)	41
1933	107	...	5	102	302	14	1	315	43	(Z)	(Z)	43
1932	114	...	1	113	327	9	1	335	56	(Z)	(Z)	56
1931	137	...	(Z)	137	452	17	2	467	83	1	1	83
1930	164	...	(Z)	164	604	28	2	630	122	2	1	123
1929	165	...	(Z)	165	697	35	3	729	140	2	1	141
1928	134	...	(Z)	134	658	30	3	685	136	2	1	137
1927	121	...	(Z)	121	656	30	2	684	139	2	1	140
1926	101	...	(Z)	101	619	34	2	651	132	2	1	133
1925	83	...	(Z)	83	601	29	2	628	140	2	1	141
1924	69	...	(Z)	69	547	24	2	569	129	2	1	130
1923	60	...	(Z)	60	524	26	3	547	126	2	1	127
1922	37	...	(Z)	37	402	19	3	418	102	1	2	101
1921	33	...	(Z)	33	329	11	3	337	88	1	2	87
1920	28	...	(Z)	28	367	21	4	384	89	1	3	87
1919	26	...	(Z)	26	317	16	4	329	84	1	2	83
1918	21	...	(Z)	21	290	15	4	301	66	(Z)	2	64
1917	16	...	(Z)	16	382	15	4	393	100	1	2	99
1916	8	...	(Z)	8	442	13	3	452	136	1	1	136
1915	5	...	(Z)	5	398	11	2	407	119	1	1	119
1914	3	...	(Z)	3	417	13	4	426	141	1	3	139
1913	2	...	(Z)	2	444	14	7	451	145	1	5	141
1912	1	...	(Z)	1	423	12	3	432	149	2	2	149
1911	1	...	(Z)	1	437	11	3	445	173	2	2	173
1910	...	...	(Z)	...	430	10	2	438	165	2	1	166
1909	...	...	(Z)	...	417	10	2	425	178	1	1	178
1908	...	...	(Z)	...	352	8	2	358	169	1	1	169
1907	...	...	(Z)	...	373	10	2	381	166	2	1	167
1906	...	...	(Z)	...	370	8	2	376	182	1	2	181
1905	...	...	(Z)	...	351	7	3	355	182	1	2	181
1904	...	...	(Z)	...	317	7	3	321	165	1	3	163
1903	...	...	(Z)	...	314	7	5	316	171	1	5	167
1902	...	...	(Z)	...	321	6	5	322	187	1	4	184
1901	...	...	(Z)	...	274	6	7	273	160	1	7	154
1900	...	...	(Z)	...	265	5	6	264	170	(Z)	6	164

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Construction materials--Continued											
	Crushed and broken stone				Sand and gravel				Fire clay			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	904	2	1	905	681	(Z)	1	680	40	...	1	39
1960	900	2	1	901	641	(Z)	3	638	45	...	1	44
1959	840	2	2	840	662	(Z)	1	661	45	...	1	44
1958	787	1	1	787	620	(Z)	1	619	40	...	1	39
1957	779	2	2	779	569	(Z)	1	568	49	...	1	48
1956	719	2	2	719	566	(Z)	1	565	54	...	1	53
1955	671	2	2	671	537	(Z)	1	536	49	...	1	48
1954	582	1	1	582	504	(Z)	1	503	40	...	(Z)	40
1953	569	1	2	568	406	(Z)	1	405	47	...	(Z)	47
1952	554	1	2	553	402	(Z)	1	401	51	...	(Z)	51
1951	532	1	1	532	372	(Z)	...	372	54	...	1	53
1950	473	1	1	473	343	(Z)	...	343	43	...	(Z)	43
1949	420	1	1	420	295	(Z)	(Z)	295	39	...	(Z)	39
1948	426	1	2	425	296	(Z)	(Z)	296	45	...	1	44
1947	395	1	2	394	267	(Z)	(Z)	267	41	...	1	40
1946	337	1	2	336	236	(Z)	(Z)	236	36	...	(Z)	36
1945	283	(Z)	2	281	182	(Z)	(Z)	182	28	...	(Z)	28
1944	287	(Z)	1	286	182	(Z)	(Z)	182	28	...	(Z)	28
1943	322	(Z)	1	321	217	(Z)	(Z)	217	35	...	(Z)	35
1942	370	(Z)	1	369	281	1	(Z)	282	37	...	1	36
1941	345	(Z)	1	344	266	(Z)	(Z)	266	32	...	(Z)	32
1940	286	1	1	286	219	(Z)	(Z)	219	21	...	(Z)	21
1939	278	1	(Z)	279	208	(Z)	(Z)	208	17	...	(Z)	17
1938	236	1	(Z)	237	167	1	(Z)	168	13	...	(Z)	13
1937	249	1	(Z)	250	175	(Z)	(Z)	175	23	...	(Z)	23
1936	245	1	(Z)	246	165	(Z)	(Z)	165	23	...	(Z)	23
1935	158	(Z)	(Z)	158	115	(Z)	(Z)	115	16	...	(Z)	16
1934	174	(Z)	(Z)	174	108	(Z)	(Z)	108	13	...	(Z)	13
1933	135	(Z)	(Z)	135	100	(Z)	(Z)	100	13	...	(Z)	13
1932	137	(Z)	(Z)	137	110	(Z)	(Z)	110	12	...	(Z)	12
1931	193	(Z)	(Z)	193	141	(Z)	(Z)	141	11	...	(Z)	11
1930	246	1	(Z)	247	181	2	(Z)	183	21	...	(Z)	21
1929	274	1	(Z)	275	205	2	(Z)	207	29	...	(Z)	29
1928	264	1	(Z)	265	192	1	1	192	13	...	(Z)	13
1927	267	1	(Z)	268	181	1	(Z)	182	13	...	(Z)	13
1926	247	1	(Z)	248	169	1	(Z)	170	13	...	(Z)	13
1925	232	1	(Z)	233	158	1	(Z)	159	12	...	(Z)	12
1924	209	1	(Z)	210	144	1	(Z)	145	11	...	(Z)	11
1923	206	1	(Z)	207	129	(Z)	1	128	11	...	(Z)	11
1922	163	(Z)	(Z)	163	87	(Z)	(Z)	87	8	...	(Z)	8
1921	130	(Z)	(Z)	130	73	1	(Z)	74	6	...	(Z)	6
1920	157	(Z)	1	156	76	1	(Z)	77	11	...	(Z)	11
1919	129	(Z)	1	128	65	1	(Z)	66	8	...	(Z)	8
1918	133	(Z)	1	132	57	(Z)	1	56	11	...	(Z)	11
1917	160	(Z)	1	159	74	(Z)	(Z)	74	11	...	(Z)	11
1916	170	(Z)	1	169	82	(Z)	(Z)	82	10	...	(Z)	10
1915	162	(Z)	1	161	70	(Z)	(Z)	70	8	...	...	8
1914	155	(Z)	1	154	73	(Z)	(Z)	73	8	...	...	8
1913	172	(Z)	1	171	73	1	(Z)	74	10	...	...	10
1912	156	(Z)	1	155	63	(Z)	(Z)	63	9	...	...	9
1911	149	(Z)	1	148	62	(Z)	(Z)	62	8	...	...	8
1910	145	(Z)	1	144	64	(Z)	(Z)	64	9	...	...	9
1909	126	(Z)	(Z)	126	56	(Z)	(Z)	56	8	...	...	8
1908	102	1	(Z)	103	34	(Z)	(Z)	34	7	...	...	7
1907	115	1	(Z)	116	38	(Z)	(Z)	38	8	...	...	8
1906	104	(Z)	(Z)	104	30	(Z)	(Z)	30	7	...	...	7
1905	97	(Z)	(Z)	97	21	(Z)	(Z)	21	6	...	...	6
1904	81	1	(Z)	82	27	(Z)	(Z)	27	5	...	...	5
1903	76	1	(Z)	77	24	(Z)	(Z)	24	6	...	...	6
1902	72	(Z)	(Z)	72	20	(Z)	(Z)	20	5	...	...	5
1901	57	1	(Z)	58	17	(Z)	(Z)	17	5	...	...	5
1900	45	1	(Z)	46	15	(Z)	(Z)	15	4	...	...	4

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Construction materials--Continued											
	Common clay and shale				Gypsum				Other construction materials			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	41	...	...	41	28	15	(Z)	43	16	64	1	79
1960	41	...	...	41	29	16	(Z)	45	17	71	1	87
1959	42	...	...	42	33	18	(Z)	51	19	74	1	92
1958	37	...	...	37	29	12	(Z)	41	17	65	1	81
1957	37	...	...	37	28	13	(Z)	41	23	76	1	98
1956	41	...	...	41	31	13	(Z)	44	24	71	1	94
1955	41	...	...	40	32	12	(Z)	44	22	75	1	96
1954	36	...	...	36	27	10	(Z)	37	19	67	1	85
1953	34	...	...	34	25	10	(Z)	35	21	68	1	88
1952	32	...	...	32	25	9	(Z)	34	20	70	1	89
1951	33	...	...	33	26	10	(Z)	36	20	76	2	94
1950	32	...	...	32	25	10	(Z)	35	15	69	2	82
1949	25	...	...	25	20	8	(Z)	28	13	50	2	61
1948	30	...	...	30	22	9	(Z)	31	11	63	1	73
1947	26	...	...	26	19	7	(Z)	26	9	58	1	66
1946	25	...	...	25	17	4	(Z)	21	7	45	2	50
1945	13	...	...	13	11	2	(Z)	13	7	36	1	42
1944	10	...	...	10	11	1	(Z)	12	7	37	(Z)	44
1943	12	...	...	12	12	1	(Z)	13	8	43	(Z)	51
1942	16	...	...	16	14	1	(Z)	15	8	40	(Z)	48
1941	21	...	...	21	14	4	(Z)	18	8	41	1	48
1940	17	...	...	17	11	4	(Z)	15	6	25	1	30
1939	18	...	...	18	10	4	(Z)	14	4	24	1	27
1938	13	...	...	13	8	2	(Z)	10	4	18	(Z)	22
1937	16	...	...	16	9	3	(Z)	12	5	30	(Z)	35
1936	14	...	...	14	8	2	(Z)	10	5	24	1	28
1935	9	...	...	9	6	1	(Z)	7	3	17	(Z)	20
1934	6	...	...	6	5	1	(Z)	6	3	12	(Z)	15
1933	5	...	...	5	4	1	(Z)	5	2	12	(Z)	14
1932	6	...	...	6	4	1	(Z)	5	2	7	(Z)	9
1931	13	...	...	13	8	2	(Z)	10	3	14	(Z)	17
1930	20	...	...	20	10	3	(Z)	13	5	21	(Z)	26
1929	29	...	...	29	15	3	(Z)	18	5	27	(Z)	32
1928	34	...	...	34	15	3	(Z)	18	5	24	(Z)	29
1927	36	...	...	36	16	3	(Z)	19	5	24	(Z)	29
1926	38	...	...	38	17	3	(Z)	20	4	26	(Z)	30
1925	38	...	...	38	17	2	(Z)	19	3	24	(Z)	27
1924	35	...	...	35	15	2	(Z)	17	3	19	(Z)	22
1923	36	...	...	36	14	1	(Z)	15	3	22	(Z)	25
1922	28	...	...	28	11	1	(Z)	12	2	16	(Z)	18
1921	22	...	...	22	9	1	(Z)	10	1	8	(Z)	9
1920	22	...	...	22	9	1	(Z)	10	3	17	(Z)	20
1919	22	...	...	22	7	1	(Z)	8	2	13	(Z)	15
1918	16	...	...	16	6	(Z)	(Z)	6	2	14	(Z)	16
1917	27	...	...	27	8	1	(Z)	9	2	13	(Z)	15
1916	34	...	...	34	8	1	(Z)	9	2	11	(Z)	13
1915	32	...	...	32	7	1	(Z)	8	1	8	(Z)	9
1914	32	...	...	32	7	1	(Z)	8	1	10	(Z)	11
1913	36	...	...	36	8	1	(Z)	9	...	11	(Z)	11
1912	37	...	...	37	8	1	(Z)	9	...	9	(Z)	9
1911	37	...	...	37	7	1	(Z)	8	1	8	(Z)	9
1910	40	...	...	40	7	1	(Z)	8	1	7	(Z)	8
1909	42	...	...	42	7	1	(Z)	8	1	7	(Z)	8
1908	34	...	...	34	5	1	(Z)	6	1	6	(Z)	7
1907	41	...	...	41	5	1	(Z)	6	1	7	(Z)	8
1906	41	...	...	41	5	1	(Z)	6	...	5	(Z)	5
1905	40	...	...	40	3	1	(Z)	4	1	4	(Z)	5
1904	36	...	...	36	3	1	(Z)	4	...	4	(Z)	4
1903	35	...	...	35	3	1	(Z)	4	1	4	(Z)	5
1902	35	...	...	35	2	1	(Z)	3	1	4	(Z)	5
1901	33	...	...	33	2	1	(Z)	3	...	3	(Z)	3
1900	29	...	...	29	2	1	(Z)	3	...	3	(Z)	3

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Other nonmetallic minerals											
	Other nonmetallic minerals, total				Potash				Phosphate rock			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	829	199	135	893	103	9	17	95	114	2	31	85
1960	800	204	131	873	99	8	17	90	107	2	32	77
1959	767	220	115	872	89	10	12	87	97	2	25	74
1958	700	181	107	774	80	8	11	77	92	2	23	71
1957	758	208	111	855	85	8	10	83	86	2	25	63
1956	795	197	108	884	81	6	8	79	98	2	23	77
1955	723	178	95	806	77	6	5	78	77	2	18	61
1954	679	145	90	734	73	4	2	75	86	2	18	70
1953	652	166	70	748	72	5	2	75	79	2	15	66
1952	621	160	69	712	62	7	2	67	76	2	11	67
1951	607	199	74	732	53	12	3	62	68	1	13	56
1950	548	190	70	668	48	8	2	54	70	1	14	57
1949	479	134	65	548	42	1	3	40	58	(Z)	10	48
1948	503	148	60	591	43	1	3	41	55	(Z)	9	46
1947	485	100	59	526	39	1	3	37	57	(Z)	6	51
1946	457	119	53	523	35	(Z)	3	32	44	1	6	39
1945	412	119	42	489	33	(Z)	3	30	37	1	4	34
1944	406	112	35	483	31	(Z)	3	28	34	1	4	31
1943	386	160	35	511	28	1	3	26	33	(Z)	4	29
1942	369	128	30	467	25	(Z)	2	23	30	(Z)	4	26
1941	343	112	40	415	20	1	2	19	30	(Z)	7	23
1940	278	80	38	320	14	5	2	17	26	(Z)	6	20
1939	235	63	38	260	12	4	3	13	24	(Z)	7	17
1938	220	49	35	234	12	7	2	17	24	(Z)	8	16
1937	254	93	39	308	11	13	2	22	25	(Z)	7	18
1936	219	64	34	249	9	8	2	15	22	(Z)	8	14
1935	182	52	30	204	7	9	2	14	20	(Z)	8	12
1934	161	40	31	170	5	6	1	10	18	(Z)	7	11
1933	151	35	29	157	5	6	1	10	16	(Z)	6	10
1932	112	25	20	117	2	4	(Z)	6	9	(Z)	4	5
1931	175	41	27	189	2	8	1	9	16	(Z)	7	9
1930	215	56	33	238	2	13	(Z)	15	25	(Z)	8	17
1929	216	77	41	252	2	12	(Z)	14	24	(Z)	8	16
1928	197	63	31	229	2	12	(Z)	14	22	(Z)	6	16
1927	189	56	33	212	2	9	(Z)	11	20	(Z)	6	14
1926	186	72	25	233	1	10	(Z)	11	21	(Z)	5	16
1925	173	58	28	203	1	10	(Z)	11	22	(Z)	6	16
1924	156	60	23	193	1	8	(Z)	9	18	(Z)	6	12
1923	179	61	23	217	1	8	(Z)	9	19	(Z)	6	13
1922	153	44	21	176	(Z)	8	(Z)	8	16	(Z)	5	11
1921	121	26	16	131	(Z)	3	(Z)	3	13	(Z)	5	8
1920	166	53	25	194	2	8	(Z)	10	26	(Z)	7	19
1919	137	44	13	168	1	2	(Z)	3	15	(Z)	3	12
1918	160	28	9	179	2	(Z)	(Z)	2	16	(Z)	1	15
1917	152	41	9	184	1	(Z)	(Z)	1	17	(Z)	1	16
1916	122	47	8	161	(Z)	(Z)	(Z)	(Z)	13	(Z)	2	11
1915	98	38	5	131	(Z)	2	(Z)	2	12	(Z)	2	10
1914	91	46	13	124	(Z)	8	(Z)	8	17	(Z)	6	11
1913	101	58	14	145	(Z)	10	(Z)	10	20	(Z)	9	11
1912	90	54	13	131	(Z)	10	(Z)	10	19	(Z)	8	11
1911	85	53	13	125	(Z)	10	(Z)	10	20	(Z)	8	12
1910	82	55	10	127	(Z)	11	(Z)	11	17	(Z)	7	10
1909	78	47	10	115	(Z)	7	(Z)	7	15	(Z)	7	8
1908	71	30	10	91	(Z)	5	(Z)	5	15	(Z)	8	7
1907	77	45	10	112	(Z)	5	(Z)	5	15	(Z)	7	8
1906	76	54	8	122	(Z)	6	(Z)	6	13	(Z)	6	7
1905	69	41	8	102	(Z)	5	(Z)	5	12	(Z)	6	6
1904	60	36	8	88	(Z)	5	(Z)	5	12	1	6	7
1903	53	42	6	89	(Z)	5	(Z)	5	10	1	5	6
1902	52	44	6	90	(Z)	5	(Z)	5	9	1	5	5
1901	52	40	6	86	(Z)	4	(Z)	4	9	1	5	5
1900	50	34	5	79	(Z)	4	(Z)	4	9	1	4	6

Z Less than 0.5 million dollars.

Table A11.--Production, Imports, Exports, and Apparent Consumption of Minerals in Constant 1954 Dollars, by Major Mineral Products: 1900-1961--Continued

(All production, import, export, and consumption figures in millions of dollars)

Year	Other nonmetallic minerals--Continued															
	Sulfur and pyrites				Other chemical and fertilizer materials				Abrasive materials				Other nonmetallic minerals			
	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
1961	187	6	41	152	287	55	24	318	8	51	12	47	130	76	10	196
1960	171	23	46	148	284	56	17	323	8	47	9	46	131	68	10	189
1959	159	20	42	137	282	55	15	322	9	48	9	48	131	85	12	204
1958	158	19	42	135	245	43	12	276	8	36	8	36	117	73	11	179
1957	180	14	41	153	279	66	14	331	8	47	10	45	120	71	11	180
1956	201	7	43	165	283	49	14	318	8	60	10	58	124	73	10	187
1955	181	2	42	141	261	36	12	285	8	54	9	53	119	78	9	188
1954	172	1	43	130	233	31	12	252	8	51	8	51	107	56	7	156
1953	161	3	33	131	229	35	8	256	7	50	7	50	104	71	5	170
1952	162	4	35	131	214	31	8	237	6	50	6	50	101	66	7	160
1951	159	3	34	128	218	20	12	226	7	47	6	48	102	116	6	212
1950	154	3	38	119	180	17	6	191	5	43	5	43	91	118	5	204
1949	138	1	38	101	159	11	7	163	4	24	3	25	78	97	4	171
1948	142	1	34	109	173	11	7	177	5	40	2	43	85	95	5	175
1947	131	2	35	98	174	14	7	181	5	17	3	19	79	66	5	140
1946	147	2	32	117	151	7	5	153	4	19	2	21	76	90	5	161
1945	112	2	25	89	161	12	5	168	4	40	2	42	65	64	3	126
1944	99	2	18	83	176	13	5	184	3	46	2	47	63	50	3	110
1943	82	3	18	67	171	15	6	180	4	44	1	47	68	97	3	162
1942	103	4	15	92	146	12	5	153	4	40	1	43	61	72	3	130
1941	94	5	20	79	131	8	5	134	4	26	2	28	64	72	4	132
1940	82	5	20	67	107	8	5	110	3	15	2	16	46	47	3	90
1939	64	6	17	53	92	8	6	94	3	14	2	15	40	31	3	68
1938	71	4	15	60	76	9	4	81	2	7	2	7	35	22	4	53
1937	81	6	18	69	90	14	6	98	3	9	2	10	44	51	4	91
1936	62	5	15	52	83	9	5	87	3	6	1	8	40	36	3	73
1935	51	5	11	45	70	7	5	72	3	5	1	7	31	26	3	54
1934	44	4	14	34	64	8	5	67	2	3	1	4	28	19	3	44
1933	43	4	14	33	59	7	4	62	3	2	1	4	25	16	3	38
1932	28	3	9	22	48	5	4	49	2	1	(Z)	3	23	12	3	32
1931	63	4	11	56	59	7	4	62	2	2	(Z)	4	33	20	4	49
1930	76	4	16	64	66	9	4	71	3	3	1	5	43	27	4	66
1929	71	6	23	54	71	11	4	78	5	3	1	7	43	45	5	83
1928	61	5	18	48	65	9	3	71	5	2	1	6	42	35	3	74
1927	63	3	21	45	60	9	3	66	5	2	1	6	39	33	2	70
1926	57	4	15	46	60	9	2	67	6	3	1	8	41	46	2	85
1925	44	3	16	31	58	6	3	61	6	4	1	9	42	35	2	75
1924	38	3	13	28	55	9	2	62	6	2	1	7	38	38	1	75
1923	59	3	12	50	57	6	2	61	6	3	1	8	37	41	2	76
1922	52	3	13	42	52	4	2	54	4	2	(Z)	6	29	27	1	55
1921	53	3	7	49	33	3	2	34	4	1	1	4	18	16	1	33
1920	42	4	12	34	61	5	3	63	8	3	1	10	27	33	2	58
1919	39	5	6	38	54	3	2	55	6	2	1	7	22	32	1	53
1918	49	6	3	52	62	2	3	61	8	2	1	9	23	18	1	40
1917	42	11	4	49	61	3	2	62	8	2	1	9	23	25	1	47
1916	28	15	3	40	53	4	1	56	7	2	1	8	21	26	1	46
1915	22	12	1	33	41	3	1	43	6	2	1	7	17	19	(Z)	36
1914	18	13	3	28	34	4	1	37	6	3	1	8	16	18	2	32
1913	20	10	2	28	34	5	1	38	7	2	1	8	20	31	1	50
1912	15	12	2	25	33	5	1	37	7	2	1	8	16	25	1	40
1911	11	12	1	22	30	5	1	34	6	2	1	7	18	24	2	40
1910	11	10	1	20	28	6	1	33	5	2	1	6	21	26	(Z)	47
1909	12	9	1	20	28	4	1	31	6	2	1	7	17	25	...	42
1908	14	8	1	21	25	4	(Z)	29	4	2	1	5	13	11	...	24
1907	9	8	1	16	29	6	1	34	6	2	1	7	18	24	...	42
1906	12	9	(Z)	21	26	6	1	31	6	2	1	7	19	31	...	50
1905	10	8	(Z)	18	25	4	1	28	6	1	1	6	16	23	...	39
1904	6	8	(Z)	14	22	4	1	25	7	1	1	7	13	17	...	30
1903	4	10	...	14	19	5	(Z)	24	6	2	1	7	14	19	...	33
1902	3	10	(Z)	13	22	5	(Z)	27	6	2	1	7	12	21	...	33
1901	4	9	...	13	18	5	(Z)	23	5	2	1	6	16	19	...	35
1900	3	8	(Z)	11	19	5	(Z)	24	6	1	1	6	13	15	...	28

Z Less than 0.5 million dollars.

Table A12.--Primary and Secondary Production of Nonferrous Metals, Except Precious Metals and Uranium, in Constant 1954 Dollars: 1910-1961

(All production figures in millions of dollars. Secondary production represents old scrap only.)

Year	All specified metals			Copper			Lead			Zinc			Bauxite and magnesium			Antimony, cadmium, mercury, tin, and titanium		
	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary	Total	Primary	Secondary
1961......	997	687	310	703	519	184	137	55	82	60	53	7	36	32	4	61	28	33
1960......	971	649	322	675	483	192	138	52	86	58	50	8	40	37	3	60	27	33
1959......	870	527	343	580	369	211	137	54	83	58	49	9	36	32	4	59	23	36
1958......	900	594	306	622	438	184	128	56	72	55	47	8	33	29	4	62	24	38
1957......	1,053	707	346	685	486	199	162	71	91	70	61	9	64	60	4	72	29	43
1956......	1,073	708	365	704	494	210	168	74	94	70	62	8	56	52	4	75	26	49
1955......	1,039	647	392	677	447	230	165	71	94	69	59	10	53	49	4	75	21	54
1954......	900	571	329	556	374	182	158	69	89	62	54	8	57	54	3	67	20	47
1953......	978	634	344	606	414	192	162	72	90	70	63	7	71	66	5	69	19	50
1952......	1,005	665	340	600	414	186	169	82	87	84	76	8	79	74	5	73	19	54
1951......	996	631	365	620	415	205	175	82	93	86	78	8	41	36	5	74	20	54
1950......	984	609	375	624	407	217	181	91	90	79	71	8	25	21	4	75	19	56
1949......	822	526	296	509	337	172	164	87	77	74	68	6	19	17	2	56	17	39
1948......	942	566	376	600	374	226	173	82	91	80	72	8	22	18	4	67	20	47
1947......	950	570	380	604	379	225	175	81	94	81	73	8	22	16	6	68	21	47
1946......	747	439	308	454	272	182	144	71	73	75	66	9	15	13	2	59	17	42
1945......	896	546	350	568	346	222	147	82	65	80	70	10	29	28	1	72	20	52
1944......	1,065	739	326	639	435	204	149	88	61	95	82	13	111	110	1	71	24	47
1943......	1,169	847	322	680	488	192	161	96	65	95	85	10	154	153	1	79	25	54
1942......	1,066	747	319	674	483	191	170	105	65	96	88	8	50	49	1	76	22	54
1941......	989	647	342	614	429	185	177	97	80	95	86	9	18	17	1	85	18	67
1940......	838	588	250	543	393	150	144	96	48	83	76	7	8	7	1	60	16	44
1939......	708	494	214	454	326	128	131	87	44	72	67	5	6	5	1	45	9	36
1938......	600	400	200	370	250	120	120	78	42	64	59	5	5	4	(Z)	41	9	32
1937......	844	561	283	560	377	183	149	98	51	79	72	7	5	5	(Z)	51	9	42
1936......	698	432	266	446	275	171	128	79	49	73	66	7	5	4	(Z)	46	8	38
1935......	566	310	256	332	170	162	120	70	50	65	59	6	4	3	(Z)	45	8	37
1934......	443	228	215	245	106	139	99	61	38	55	50	5	3	3	(Z)	41	8	33
1933......	386	192	194	201	85	116	99	57	42	50	44	6	2	2	(Z)	34	4	30
1932......	351	207	144	188	107	81	99	62	37	38	33	5	1	1	(Z)	25	4	21
1931......	572	378	194	354	237	117	129	85	44	53	47	6	2	2	(Z)	34	7	27
1930......	754	512	242	468	315	153	165	118	47	75	68	7	3	3	(Z)	42	8	34
1929......	971	678	293	627	446	181	195	137	58	91	83	8	4	4	(Z)	54	8	46
1928......	905	628	277	569	405	164	189	132	57	88	80	8	4	4	(Z)	55	7	48
1927......	862	599	263	521	369	152	191	140	51	91	82	9	4	3	(Z)	55	5	50
1926......	887	627	260	537	386	151	195	144	51	99	89	10	4	4	(Z)	52	4	48
1925......	831	607	224	505	375	130	186	144	42	91	81	10	3	3	(Z)	46	4	42
1924......	769	564	205	478	359	119	163	125	38	80	73	7	3	3	(Z)	45	4	41
1923......	728	524	204	452	331	121	151	115	36	78	70	8	5	5	(Z)	42	3	39
1922......	528	376	152	307	216	91	130	101	29	59	54	5	3	3	(Z)	29	2	27
1921......	327	224	103	163	104	59	106	87	19	32	29	3	1	1	(Z)	25	3	22
1920......	590	456	134	350	274	76	128	105	23	72	67	5	5	5	(Z)	35	5	30
1919......	563	435	128	339	271	68	113	91	22	70	63	7	4	3	(Z)	37	7	30
1918......	764	634	130	506	427	79	137	119	18	76	73	3	6	6	(Z)	39	9	30
1917......	785	653	132	511	424	87	149	132	17	85	82	3	5	5	(Z)	35	10	25
1916......	791	670	121	527	449	78	145	127	18	84	81	3	4	4	(Z)	31	9	22
1915......	614	526	88	387	333	54	128	114	14	70	67	3	3	3	(Z)	26	9	17
1914......	487	420	67	296	257	39	118	107	11	50	48	2	2	2	(Z)	21	6	15
1913......	507	433	74	317	276	41	115	102	13	49	47	2	2	2	(Z)	24	6	18
1912......	507	425	82	327	279	48	105	93	12	47	44	3	2	2	(Z)	26	7	19
1911......	448	384	64	283	249	34	100	90	10	40	38	2	1	1	(Z)	24	6	18
1910......	426	368	58	272	243	29	91	81	10	39	37	2	1	1	(Z)	23	6	17

Z Less than 0.5 million dollars.

Table A13.--Adjustment Series for Agricultural Production; Agricultural Products Used for Feed and Seed and Net Imports of Cattle and Hogs in Constant 1954 Dollars: 1924-1961

(All production figures in millions of dollars)

Year	Agricultural products used for feed and seed						Net imports of cattle and hogs
	Total	Crops				Livestock	
		Total	Feed grains	Hay, silage, and forage	Other crops		
1961	10,922	10,195	5,925	2,864	1,406	727	74
1960	10,370	9,646	5,584	2,755	1,307	724	46
1959	10,537	9,779	5,394	2,925	1,460	758	48
1958	10,162	9,353	5,098	2,847	1,408	809	107
1957	9,389	8,552	4,616	2,683	1,253	837	67
1956	9,586	8,681	4,652	2,674	1,355	905	6
1955	9,471	8,512	4,543	2,719	1,250	959	24
1954	9,546	8,463	4,712	2,533	1,218	1,083	11
1953	9,721	8,752	4,771	2,567	1,414	969	21
1952	9,907	8,950	4,963	2,633	1,354	957	10
1951	10,127	9,071	5,088	2,571	1,412	1,056	36
1950	9,934	8,868	4,946	2,452	1,470	1,066	58
1949	9,693	8,641	4,948	2,275	1,418	1,052	33
1948	9,184	8,160	4,272	2,412	1,476	1,024	72
1947	9,646	8,559	4,686	2,435	1,438	1,087	6
1946	10,225	9,205	5,035	2,546	1,624	1,020	6
1945	10,405	9,278	4,979	2,574	1,725	1,127	33
1944	10,442	9,282	4,871	2,615	1,796	1,160	25
1943	11,669	10,372	5,540	2,680	2,152	1,297	54
1942	10,419	9,029	4,971	2,572	1,486	1,390	66
1941	9,488	8,012	4,365	2,534	1,113	1,476	74
1940	9,192	7,766	4,147	2,437	1,182	1,426	59
1939	8,918	7,499	4,039	2,281	1,179	1,419	76
1938	8,480	7,076	3,779	2,099	1,198	1,404	43
1937	7,605	6,277	3,032	2,070	1,175	1,328	58
1936	7,852	6,484	3,577	1,754	1,153	1,368	57
1935	7,628	6,246	2,858	2,306	1,082	1,382	31
1934	7,281	5,851	3,239	1,541	1,071	1,430	1
1933	8,788	7,292	4,374	1,882	1,036	1,496	5
1932	9,185	7,691	4,510	2,069	1,112	1,494	5
1931	8,481	6,986	3,840	1,849	1,297	1,495	4
1930	8,386	6,962	4,082	1,824	1,056	1,424	37
1929	8,836	7,434	4,335	2,123	976	1,402	83
1928	8,969	7,591	4,541	2,044	1,006	1,378	82
1927	9,120	7,720	4,454	2,382	884	1,400	66
1926	8,314	6,941	4,211	1,861	869	1,373	29
1925	8,856	7,535	4,751	1,932	852	1,321	4
1924	8,423	7,114	3,961	2,213	940	1,309	...

Appendix B.--THE RAW MATERIALS PRICE INDEXES

Raw materials price indexes, closely comparable to the measures of raw materials consumption, have been constructed to permit a better measure of the relation between price movements and consumption of the various groups of commodities (see table B1).

The consumption weights used in these series have the advantage over production weights not only of being representative of commodities in the relative magnitudes in which they have been consumed in the United States, but also of including representation of raw materials not produced in this country or produced domestically in negligible amounts.

A few such price figures were shown in the President's Materials Policy Commission report. But the first complete price series of this type were those shown in Bureau of the Census Working Paper Number 1. For the present report the price indexes have been completely revised, both to represent somewhat better balanced and more complete coverage and to introduce weight bases representative of the consumption patterns of four different major periods since 1900, rather than of the single period 1935-1939 as in the earlier report.

GENERAL METHODS EMPLOYED

Aggregative price indexes have been used in this report. These represent prices of individual materials (or groups of materials) weighted by quantities consumed in the base periods. The basic formula used to combine the prices of the various materials was as follows:

$$P_n = \frac{\sum \frac{p_n}{p_o} p_o q_o}{\sum p_o q_o} . 100 = \frac{\sum p_n q_o}{\sum p_o q_o} . 100$$

where P_n = index number for raw materials prices for a given year "n,"

p_n = average unit price of an individual material in a given year "n,"

p_o = average unit price of an individual material in the base period,

q_o = average annual quantity of an individual material consumed in the base period,

$\frac{p_n}{p_o} .100$ = price index for an individual material with period "o" as a base,

$p_o q_o$ = average annual value of an individual material consumed in the base period.

The index was constructed with 1954 as an index base, but with weight bases representative of each of four periods of approximately 15 years. The weight base periods used were 1905-1909, 1920-1924, 1935-1939, and 1950-1954. The indexes were spliced in the years 1914, 1929, and 1944.

In actual use, two adaptations were made of the above formula: (1) For certain commodity areas, primarily agricultural products, suitable consumption series were not available for each individual commodity. For these areas, group price indexes were used at the levels for which suitable consumption measures were available. (2) The actual consumption aggregates used represented averages of consumption aggregates in 1954 dollars of the type shown in tables A4 and A5. Using the consumption aggregates in terms of 1954 dollars introduces a slight bias into the weights, but this bias is probably negligible in all areas.

TYPE AND SOURCES OF DATA USED

Wherever they were available, the prices used were those representing the primary market for each raw material. Where these were not obtainable, available prices for the market closest to the primary market were used. For example, lumber price relatives were used to represent sawlog price movements; wood pulp prices were used to represent pulpwood; and for some metal ores, prices were represented by the prices of metals in major markets, as electrolytic copper f.o.b. refinery as priced in New York markets instead of the mine value of copper ore. The weights applied to such price relatives, however, were always at the raw-materials level.

For the earlier years, especially those prior to 1916, lack of comparable prices made it necessary to extrapolate the price data for some raw materials back to 1900 by various expedients. Some price series were extrapolated backward by prices of a different grade or kind of the same material. Thus prices of plantation rubber ribbed smoked sheets were extrapolated from 1912 to 1900 by prices of Para Island rubber. Wood pulp prices were carried from 1912 back to 1900 by means of average unit prices of imported wood pulp. Other series were extrapolated by prices of related materials; for example, the price of dimension limestone for 1906 through 1908 was estimated to move in accordance with the price of dimension granite.

In the case of two groups of commodities--domestic agricultural materials and forest products--price indexes developed by other agencies were used to represent certain groups of raw materials, even though the weighting systems were somewhat different from those described above. In each case, however, segments of these groups were recombined, using the consumption aggregates of this report as weights. The more specific sources and qualifications of data used are indicated in the following paragraphs.

Agricultural Materials

Price indexes for nine groups of food crops, six groups of nonfood crops, three groups of livestock products for food, and three groups of livestock products for nonfood use were combined with consumption weights to yield the agricultural materials price indexes.

Agricultural materials produced domestically.--For the years 1910-1961, the group price indexes used are those for prices received by farmers computed by the Agricultural Marketing Service, U.S. Department of Agriculture. (See Major Statistical Series of the U.S. Department of Agriculture, Vol. I, Agricultural Prices and Parity, Agriculture Handbook No. 118, August 1957.) These indexes measure the change in average prices for important agricultural commodities at the point of first sale out of farmers' hands, which is generally the local market. In general, the prices used represent the average price for all grades or qualities of each product sold in the specified period. The annual series represent an average of figures obtained for 12 monthly periods. Most of the data were obtained from voluntary price reporters scattered throughout all areas of the United States. For the latter part of the period the series are based on prices of 52 important commodities that account for about 92 percent of the total cash receipts from the sale of farm products. Somewhat fewer commodities are included for the early years. (See table B2 and its footnote 3.) Two weight bases were used for the series: 1924-1929 for 1910 through 1934 and 1937-1941 for 1935 through 1961. The weights were adjusted to reflect weights for commodities not included in the index. The commodity or commodity group indexes used from this source are: food grains; feed grains (with and without hay); fruit; potatoes, sweet potatoes, and dry edible beans; commercial vegetables for fresh market; oil bearing crops; cotton; tobacco; dairy products; meat animals; poultry and eggs; and wool.

For the years 1900-1909, the individual group indexes of prices received by farmers were extrapolated backward by means of indexes of farm product prices shown by Louis H. Bean, Technical Bulletin 703, page 140, U.S. Department of Agriculture. The extrapolation was based on the year 1910, for which both indexes were available.

Foreign agricultural materials.--The prices of imported agricultural materials used in constructing the census indexes were those quoted on organized exchanges or markets and collected by the Bureau of Labor Statistics, U.S. Department of Labor. They represent the first important commercial transaction in the commodity after arrival in this country. Price indexes of individual commodities are in some cases (for example, rubber) based on weighted average quotations of two or more kinds or grades. Such series were used for bananas; certain oil crops; coffee, tea, and cocoa; pepper, representing spices; rubber; hard fibers; and silk.

Forest Products

Forest product prices are represented by the lumber, wood pulp, and plywood price indexes computed by the Bureau of Labor Statistics. These are based on prices quoted in primary markets for these commodities. The lumber index for recent years is composed of quotations for 49 kinds or grades of hardwoods and softwoods. The wood pulp index currently comprises prices for five different types of pulp. The plywood index is based on three grades of softwood and two grades of hardwood plywood. These indexes were each constructed by the Bureau of Labor Statistics (BLS) with quantity weights representing averages for the years 1929 and 1931 for years prior to 1947, and averages for the year 1947 for 1947 and later years. The BLS indexes were combined, using Bureau of the Census consumption weights for the four base periods representing sawlogs, pulpwood, and veneer logs, respectively.

Minerals

Price indexes for five major groups of commodities were constructed for minerals, based on price series for 56 individual commodities. The minerals price indexes are based primarily on unit value at point of production series for minerals developed from quantity and value of products figures contained in the Minerals Yearbook of the Bureau of Mines, U.S. Department of the Interior. Therefore, as for agriculture, the series used represent averages for all grades of products shipped from the mineral industries or used in making manufactured products at associated establishments. Most of the figures used are based on data collected in the monthly or annual surveys of the Bureau of Mines. These represent essentially complete coverage of domestic production of the specified commodities. For the major nonferrous-metal ores, however, the Bureau of Mines collects no value-of-products data. These commodities were represented by the prices of the corresponding metals as quoted at St. Louis or New York. Since the prices paid for ores usually reflect closely these quoted prices for the metals contained, it is believed that no significant bias is introduced by the use of this device. Similarly, in a few other cases price relatives for the principal products made from the mineral raw materials were used to represent the price trend for the raw mineral; examples are brick to represent common clay, and cement and lime, respectively, to represent the stone used in their production.

For several series, comparable data were not available for portions of the early period. In some cases, this was because there was negligible domestic production of the mineral in early years. Thus, figures for magnesium prices prior to 1914 were extrapolated on the basis of the import price of German magnesium.

SCOPE OF THE SERIES

The price index covers commodities representing about 93 percent of the value of all raw materials included in the consumption measures in the period 1950-1954, and this coverage was nearly as high for earlier weight base periods. The only broad materials group not represented is fishery and wildlife products. (Rough price indexes for fishery products and furs were developed and used for parts of the six decades in completing the production and consumption measures. However, these series were less reliable than the other price series, and they were not used in constructing the summary price indexes.) Fuel wood is one of the most important individual commodities not represented.

The table on the following page indicates the approximate coverage for various segments of the price index in the base periods.

Table B2 shows the raw materials groups or individual raw materials actually represented in the price indexes, together with their relative importance

Materials group	Average annual value of consumption							
	Millions of 1954 dollars				Value of commodities included in price index as percent of group total value			
	1950-1954	1935-1939	1920-1924	1905-1909	1950-1954	1935-1939	1920-1924	1905-1909
All raw materials, except gold...	44,965	30,282	25,709	20,536	93.0	90.4	90.6	89.1
Agricultural materials.............	26,228	19,750	16,265	13,336	93.5	93.0	94.3	94.2
Crops......................... ..	11,271	9,065	6,998	5,903	86.3	86.1	88.8	88.9
Livestock......................	14,957	10,685	9,267	7,433	98.8	98.8	98.4	98.5
Fishery and wildlife products........	689	555	393	364	0.0	0.0	0.0	0.0
Forest products...................	3,004	2,390	2,734	3,024	80.8	60.9	61.4	64.3
Minerals, except gold..............	15,044	7,587	6,317	3,812	99.0	99.4	99.6	99.5
Iron and ferroalloy ores..........	1,300	442	440	370	100.0	100.0	100.0	100.0
Other metal ores................	1,361	811	580	367	96.8	98.3	99.0	98.6
Mineral fuels...................	10,466	5,564	4,664	2,586	100.0	100.0	100.0	100.0
Construction materials...........	1,204	524	451	379	99.6	100.0	100.0	100.0
Chemical and fertilizer minerals ..	484	169	116	64	84.9	87.6	92.2	92.2
Abrasives and miscellaneous materials....................	229	77	66	46	87.8	85.7	84.8	78.3

in each weight base period in terms of 1954 dollars. This table includes the complete list of mineral products, but only product groups for certain other areas. Table B3 presents the detailed list of domestic agricultural commodities included for the later years, with their approximate weight as a component of the all raw materials index for the period 1935-1939.

EFFECT OF CHANGING WEIGHT BASE

The use of changing weight bases in constructing the price indexes, in general, has little effect at the splicing points. This is indicated in table B4 which shows indexes for adjacent years to each splicing point computed on the basis of weights used for both the preceding and succeeding periods. In almost all cases the two indexes differ by two points or less. However, the much larger possible divergence is indicated by the difference of 20 points for the two different weights bases when applied to the 1945 figures for "Abrasives and miscellaneous minerals."

If constant weights had been used throughout the entire period, the fluctuations in the series would have been much greater. To illustrate the influence of constant weights on these indexes, table B5 presents the price indexes as developed for table B1 for the years 1940, 1930, 1920, 1910, and 1900 in comparison with similar indexes constructed with constant 1950-1954 weights. The fixed weight base series are subject to much wider fluctuations due to the greater influence of the more erratic behavior of price series for commodities in periods when the total value of such commodities was relatively small. This is particularly notable in the 1900 and 1920 figures for mineral fuels, showing the influence of petroleum price changes in periods when oil was much less important in mineral fuel consumption than in later years.

COMPARATIVE PRICE INDEXES FOR ALL WHOLESALE COMMODITIES AND FINISHED COMMODITIES

The price indexes described in the preceding paragraphs represent prices in current dollars for each period. In order to judge the full significance of the trends indicated, it is necessary to compare these indexes with measures of price trends for other segments of the U.S. economy.

Two such measures are presented in table B1. The Bureau of Labor Statistics index of all wholesale commodity prices is shown on a 1954 base. Several of the tables in this report present the raw materials price indexes as percentages of this "all wholesale commodities" price index. Such series are frequently described as "real" prices, because they approximately eliminate the effect of changes in the value of the dollar.

The other comparison index shown in table B1 is an index of prices of finished commodities. For the period 1929-1961 this index was computed by developing an average of the Office of Business Economics' implicit price deflators for consumer durable and nondurable goods, producers' durable equipment, and private new construction. These price deflators were weighted by 1950-1954 average expenditures for the period 1944-1957 and by 1935-1939 average expenditures for the period 1929-1943. For the period 1900-1928, an index constructed by William H. Shaw for the National Bureau of Economic Research was used. This index represents all finished commodities, including construction materials. Overlapping years were available for the two series, which permitted splicing of the series in 1929.

Table B1 --Indexes of Raw

(1954

Year	Comparison indexes		All raw mate-rials, except gold and fishery and wildlife products	Raw materials, by broad use classes			Raw materials, by broad product groups						
							Agricultural materials						
								Crops			Livestock		
	All whole-sale commodi-ties	Finished commodi-ties		Foods	Energy mate-rials	Physical-structure materials	All agri-cultural materials	All crops	Foods	Nonfoods	All live-stock	Foods	Nonfoods
1961............	108	110	98	91	107	102	92	84	78	99	107	100	92
1960............	108	110	99	92	107	102	93	84	80	95	101	101	92
1959............	108	109	99	92	107	103	93	84	79	98	101	102	94
1958............	108	109	102	100	109	99	99	89	87	93	108	109	95
1957............	107	107	100	93	111	102	94	89	88	96	98	98	97
1956............	104	103	98	92	102	105	92	93	92	98	91	92	81
1955............	100	100	97	92	100	103	93	91	88	99	95	95	82
1954............	100	100	100	100	100	100	100	100	100	100	100	100	100
1953............	100	100	100	101	99	100	101	93	90	100	108	109	102
1952............	101	100	104	112	94	100	111	99	97	108	122	122	113
1951............	104	99	107	115	93	106	116	99	92	118	132	131	152
1950............	93	91	95	99	91	92	100	89	85	103	110	109	115
1949............	90	90	91	95	92	84	95	80	76	90	108	109	99
1948............	94	91	100	108	95	89	107	88	83	103	124	126	105
1947............	87	86	90	102	74	83	102	89	85	102	113	115	96
1946............	71	76	74	86	56	68	86	75	70	89	96	97	82
1945............	62	71	66	78	50	61	77	69	67	75	85	86	75
1944............	61	68	64	74	50	60	74	68	66	73	79	79	72
1943............	60	65	63	74	47	57	73	66	65	69	80	80	73
1942............	58	59	54	61	45	52	62	53	51	61	70	70	68
1941............	51	51	45	48	42	44	48	40	39	45	56	56	57
1940............	46	47	37	39	37	38	38	33	32	35	44	44	46
1939............	45	46	35	37	37	35	36	30	28	33	43	43	43
1938............	46	47	36	38	40	34	37	29	28	32	45	46	37
1937............	51	48	43	47	41	41	47	42	42	43	51	51	48
1936............	47	46	40	44	39	37	43	38	38	41	48	48	43
1935............	47	46	38	41	36	35	41	36	35	41	46	46	38
1934............	44	45	34	35	37	34	35	37	36	40	33	33	30
1933............	39	41	28	29	28	27	28	28	29	25	28	28	27
1932............	38	41	27	29	32	23	27	25	27	19	29	30	22
1931............	43	47	31	35	29	28	34	29	30	26	39	40	33
1930............	51	54	44	49	42	38	48	42	43	40	54	54	49
1929............	56	56	52	59	44	47	59	53	52	56	64	64	64
1928............	57	57	51	59	44	47	59	56	56	57	63	62	66
1927............	56	57	50	56	47	46	56	54	54	54	59	58	61
1926............	59	59	54	60	56	48	59	58	59	54	61	61	65
1925............	61	60	55	61	52	52	62	65	64	69	60	59	68
1924............	57	59	49	52	51	50	53	58	55	69	51	50	59
1923............	59	61	50	49	55	54	51	53	49	73	51	50	61
1922............	57	59	49	49	61	47	50	51	49	59	50	50	56
1921............	57	64	47	49	61	43	48	47	47	45	50	50	45
1920............	90	88	73	75	86	71	76	78	75	90	76	75	77
1919............	81	79	70	81	59	65	82	81	77	99	85	84	96
1918............	77	74	65	73	58	61	76	71	66	93	80	79	96
1917............	69	62	56	64	49	54	66	63	60	77	69	67	81
1916............	50	48	41	46	32	41	47	46	44	52	48	48	54
1915............	41	41	34	39	24	33	40	38	37	39	42	41	44
1914............	40	41	35	41	27	31	41	38	37	42	44	44	43
1913............	41	41	36	41	28	33	42	41	39	47	43	43	42
1912............	41	42	34	41	26	31	41	43	43	42	40	40	39
1911............	38	40	32	38	24	30	38	42	41	43	36	36	35
1910............	41	41	34	40	24	32	40	40	39	46	41	41	43
1909............	40	40	31	36	24	30	36	38	36	42	36	36	39
1908............	37	39	29	32	25	29	32	34	33	37	32	32	32
1907............	38	39	32	36	25	32	36	42	41	41	32	32	36
1906............	36	37	29	30	25	32	31	31	29	39	31	31	37
1905............	35	36	27	29	23	28	30	30	29	34	30	29	34
1904............	35	35	26	28	25	26	28	30	29	35	28	28	30
1903............	35	35	27	28	28	27	28	27	25	33	30	30	31
1902............	35	35	27	30	25	26	30	28	28	31	32	32	32
1901............	32	34	26	28	24	25	28	28	28	29	29	29	30
1900............	33	34	25	26	25	26	26	26	25	30	27	27	29

Materials Prices: 1900-1961

= 100)

Raw materials, by broad product groups--Continued														
Forest products			Minerals, except gold											Year
				Metals, except gold			Mineral fuels				Other nonmetallic minerals			
All forest products	Sawlogs	Pulpwood	All minerals, except gold	All metals, except gold	Iron and ferro-alloy ores	Other metal ores, except gold	All mineral fuels	Coal	Oil and gas	Construction materials	All other non-metallic minerals	Chemical and fertilizer minerals	Abrasives and miscellaneous minerals	
99	98	104	107	103	101	104	107	102	108	109	124	105	157	1961
104	103	110	107	104	101	108	107	102	108	109	114	103	134	1960
108	108	111	106	104	103	104	107	105	107	109	110	101	126	1959
102	101	111	107	98	101	94	109	107	109	107	108	104	114	1958
103	102	108	109	106	107	104	111	112	111	107	104	104	106	1957
108	108	107	105	117	107	126	102	105	101	105	101	103	99	1956
105	106	103	102	109	101	116	100	99	100	101	112	103	128	1955
100	100	100	100	100	100	100	100	100	100	100	100	100	100	1954
101	102	99	98	99	100	98	99	109	96	96	91	93	86	1953
103	103	102	93	95	91	99	94	109	90	94	79	85	68	1952
106	105	104	92	93	84	103	93	109	90	93	71	82	52	1951
96	98	87	87	78	72	85	90	107	86	90	67	78	47	1950
86	84	88	87	75	67	83	92	107	89	88	63	73	45	1949
94	91	98	89	75	59	91	95	109	93	85	62	73	45	1948
82	81	87	72	67	53	81	74	91	70	80	62	71	46	1947
54	51	64	57	54	49	58	56	77	52	73	58	66	43	1946
47	44	58	52	51	50	52	50	68	46	69	56	66	39	1945
46	43	57	52	50	49	51	50	65	46	69	64	64	63	1944
43	40	53	51	51	52	51	47	60	45	67	56	63	45	1943
41	38	53	46	49	47	51	45	53	45	62	31	61	17	1942
38	35	51	44	48	45	50	42	49	43	57	29	59	15	1941
33	29	46	40	46	43	47	37	43	38	54	28	58	14	1940
28	26	30	39	44	44	45	37	41	39	55	28	59	13	1939
27	25	35	41	42	44	41	40	44	43	55	29	62	12	1938
32	28	48	43	49	44	52	41	43	45	56	29	62	13	1937
27	25	31	40	42	40	44	39	41	42	56	28	61	13	1936
25	23	30	38	41	40	41	36	41	38	55	28	59	13	1935
26	24	32	38	39	40	40	37	41	39	57	28	61	13	1934
22	20	27	30	33	40	29	28	33	28	54	28	61	12	1933
19	17	26	32	28	39	21	32	33	34	54	29	63	12	1932
22	20	33	32	31	38	27	29	38	27	60	31	65	14	1931
27	24	35	43	38	38	38	42	42	47	65	35	69	19	1930
29	27	36	47	47	40	52	44	43	50	70	47	70	36	1929
28	26	37	46	44	38	49	44	44	47	71	47	70	36	1928
29	26	38	48	46	38	51	47	47	52	71	47	70	35	1927
31	28	41	55	49	38	56	56	49	74	72	48	69	38	1926
32	29	39	53	48	36	56	52	48	66	71	45	66	35	1925
32	29	38	51	46	40	50	51	50	57	73	46	70	34	1924
36	33	46	55	48	46	49	55	58	54	73	47	71	35	1923
31	29	38	58	44	45	42	61	62	65	73	48	72	37	1922
29	26	51	59	43	49	38	61	60	69	81	55	88	37	1921
55	48	101	80	56	53	57	86	74	118	89	64	92	52	1920
36	33	50	60	56	51	59	59	51	79	71	57	81	46	1919
28	24	53	61	65	51	75	58	51	78	63	64	94	50	1918
25	21	67	53	64	47	76	49	44	62	50	63	84	57	1917
19	16	52	39	56	35	71	32	28	44	40	57	70	55	1916
16	14	29	30	43	28	53	24	24	27	37	56	65	60	1915
16	15	30	29	33	25	38	27	25	33	37	46	56	47	1914
18	16	32	31	38	29	44	28	25	38	37	40	57	34	1913
17	15	30	29	37	25	47	26	24	30	37	42	56	39	1912
16	14	28	28	37	30	41	24	23	25	34	37	55	29	1911
16	14	28	28	39	34	39	24	23	25	34	35	54	25	1910
16	14	30	27	36	31	37	24	22	28	33	36	57	25	1909
16	14	30	28	35	30	37	25	23	29	34	37	56	29	1908
17	15	29	30	44	35	51	25	24	29	36	42	57	38	1907
17	15	27	29	42	31	51	25	23	29	38	38	52	33	1906
14	13	29	27	35	26	42	23	22	25	38	38	54	31	1905
13	12	25	28	30	21	37	25	23	34	38	38	57	29	1904
14	13	25	31	34	27	37	28	25	37	42	39	57	31	1903
13	12	29	28	29	22	34	25	23	32	38	38	55	31	1902
13	11	31	27	31	21	39	24	21	38	36	42	62	34	1901
13	11	31	29	39	33	41	25	21	47	36	42	70	29	1900

Table B2.--Raw Materials Represented in the Price Indexes

Materials group or material[1]	Average annual value of consumption							
	Millions of 1954 dollars[2]				Percent of all raw materials represented			
	1950-1954	1935-1939	1920-1924	1905-1909	1950-1954	1935-1939	1920-1924	1905-1909
ALL RAW MATERIALS, EXCEPT GOLD AND FISHERY AND WILDLIFE PRODUCTS	44,276	29,727	25,316	20,172	100.0	100.0	100.0	100.0
BROAD MATERIALS GROUPS								
Agricultural materials	26,228	19,750	16,265	13,336	59.2	66.4	64.2	66.1
Forest products	3,004	2,390	2,734	3,024	6.8	8.1	10.8	15.0
Minerals, except gold	15,044	7,587	6,317	3,812	34.0	25.5	25.0	18.9
MATERIALS								
AGRICULTURAL MATERIALS[3]	26,228	19,750	16,265	13,336	59.2	66.4	64.2	66.1
Crops[3]	11,271	9,065	6,998	5,903	25.4	30.5	27.6	29.3
Foods[3]	8,085	6,759	5,546	4,771	18.2	22.7	21.9	23.7
Food grains[3]	894	857	800	896	2.0	2.9	3.2	4.5
Feed grains and sugar crops	789	687	730	715	1.8	2.3	2.9	3.6
Fruits and tree nuts:								
Domestic fruits[3]	1,216	948	753	459	2.7	3.2	3.0	2.3
Bananas	228	230	163	184	0.5	0.8	0.6	0.9
Potatoes, sweet potatoes, and dry beans and peas[3]	527	482	450	405	1.2	1.6	1.8	2.0
Fresh vegetables[3]	1,449	1,289	1,124	988	3.3	4.3	4.4	4.9
Oil crops[3]	493	414	190	188	1.1	1.4	0.7	0.9
Coffee, tea, and cocoa	2,486	1,849	1,333	933	5.6	6.2	5.3	4.6
Spices[3]	3	3	3	3	(Z)	(Z)	(Z)	(Z)
Nonfoods[3]	3,186	2,306	1,452	1,132	7.2	7.8	5.7	5.6
Cotton	1,352	1,008	572	395	3.0	3.4	2.3	2.0
Nonfood oil crops[3]	287	285	230	224	0.6	1.0	0.9	1.1
Tobacco	807	497	415	374	1.8	1.7	1.6	1.8
Feed grains and other nonfood domestic crops[3]	424	266	63	39	1.0	0.9	0.2	0.2
Rubber	203	145	82	14	0.5	0.5	0.3	0.1
Other imported nonfood crops[3]	113	105	90	86	0.3	0.3	0.4	0.4
Livestock[3]	14,957	10,685	9,267	7,433	33.8	35.9	36.6	36.8
Foods[3]	13,934	9,736	8,478	6,800	31.5	32.7	33.5	33.7
Dairy products and honey	3,516	2,791	2,174	1,725	7.9	9.4	8.6	8.6
Meat animals	7,196	5,080	4,731	3,918	16.3	17.1	18.7	19.4
Poultry and eggs[3]	3,222	1,865	1,573	1,157	7.3	6.2	6.2	5.7
Nonfoods[3]	1,023	949	789	633	2.3	3.2	3.1	3.1
Mohair and shorn wool[3]	504	355	287	252	1.1	1.2	1.1	1.3
Silk	17	156	125	50	(Z)	0.5	0.5	0.2
Other livestock products for nonfood use[3]	502	438	377	331	1.1	1.5	1.5	1.6
FOREST PRODUCTS[3]	3,004	2,390	2,734	3,024	6.8	8.1	10.8	15.0
Sawlogs	1,711	1,133	1,543	1,883	3.9	3.8	6.1	9.3
Pulpwood	534	249	136	61	1.2	0.8	0.5	0.3
Veneer logs	182	74	(4)	(4)	0.4	0.2	(4)	(4)
MINERALS, EXCEPT GOLD[3]	15,044	7,587	6,317	3,812	34.0	25.5	25.0	18.9
All metals, except gold[3]	2,661	1,253	1,020	737	6.0	4.2	4.0	3.7
Iron and ferroalloy ores	1,300	442	440	370	2.9	1.5	1.7	1.9
Iron	704	252	339	318	1.6	0.8	1.3	1.6
Manganese	205	80	69	34	0.4	0.3	0.3	0.2
Tungsten	104	22	7	6	0.2	0.1	(Z)	(Z)
Chromium	86	21	7	2	0.2	0.1	(Z)	(Z)
Cobalt	36	4	1	(Z)	0.1	(Z)	(Z)	(Z)
Molybdenum	39	12	(Z)	(Z)	0.1	(Z)	(Z)	(Z)
Nickel	126	51	17	10	0.3	0.2	0.1	(Z)
Other metal ores[3]	1,361	811	580	367	3.1	2.7	2.3	1.8
Silver	105	263	47	24	0.2	0.9	0.2	0.1
Copper	592	218	205	140	1.3	0.7	0.8	0.7
Lead	178	82	117	79	0.4	0.3	0.5	0.4
Zinc	127	67	52	28	0.3	0.2	0.2	0.1
Bauxite	55	6	4	1	0.1	(Z)	(Z)	(Z)
Mercury	18	7	6	4	(Z)	(Z)	(Z)	(Z)
Antimony	11	8	9	5	(Z)	(Z)	(Z)	(Z)
Cadmium	12	6	1	(Z)	(Z)	(Z)	(Z)	(Z)
Magnesium	35	1	1	(Z)	0.1	(Z)	(Z)	(Z)
Tin	185	139	132	80	0.4	0.5	0.5	0.4

See footnotes at end of table.

Table B2.--Raw Materials Represented in the Price Indexes--Continued

Materials group or material[1]	Average annual value of consumption							
	Millions of 1954 dollars[2]				Percent of all raw materials represented			
	1950-1954	1935-1939	1920-1924	1905-1909	1950-1954	1935-1939	1920-1924	1905-1909
Mineral fuels	10,466	5,564	4,664	2,586	23.7	18.7	18.5	12.8
Coal	2,275	2,204	2,825	2,197	5.2	7.4	11.2	10.9
Anthracite	287	427	678	660	0.7	1.4	2.7	3.3
Bituminous coal and lignite	1,988	1,777	2,147	1,537	4.5	6.0	8.5	7.6
Oil and gas	8,191	3,360	1,839	389	18.5	11.3	7.3	1.9
Crude petroleum	6,840	2,976	1,699	345	15.5	10.0	6.7	1.7
Natural gas	839	241	94	44	1.9	0.8	0.4	0.2
Natural gas liquids:								
Natural gasoline	371	135	46	(Z)	0.8	0.5	0.2	(Z)
Liquefied petroleum gases	141	8	(Z)	(Z)	0.3	(Z)	(Z)	(Z)
Construction materials[3]	1,204	524	451	379	2.7	1.8	1.8	1.9
Dimension stone:								
Limestone	14	13	19	41	(Z)	(Z)	0.1	0.2
Granite	21	23	47	51	(Z)	0.1	0.2	0.3
Slate	6	6	8	17	(Z)	(Z)	(Z)	0.1
Marble	7	8	21	25	(Z)	(Z)	0.1	0.1
Trap rock	(Z)	(Z)	(Z)	2	(Z)	(Z)	(Z)	(Z)
Sandstone	6	3	12	39	(Z)	(Z)	(Z)	0.2
Miscellaneous stone	1	1	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)
Crushed and broken stone:								
For cement manufacture	69	30	33	14	0.2	0.1	0.1	0.1
For lime manufacture	24	11	10	9	0.1	(Z)	(Z)	(Z)
Slate	5	3	3	(Z)	(Z)	(Z)	(Z)	(Z)
All other stone	443	191	126	86	1.0	0.6	0.5	0.4
Sand and gravel	405	166	102	36	0.9	0.6	0.4	0.2
Fire clay	47	18	9	7	0.1	0.1	(Z)	(Z)
Magnesite	3	1	1	(Z)	(Z)	(Z)	(Z)	(Z)
Common clay and shale	33	14	29	40	0.1	(Z)	0.1	0.2
Gypsum	35	11	13	6	0.1	(Z)	0.1	(Z)
Native asphalt and bitumens	7	2	2	1	(Z)	(Z)	(Z)	(Z)
Asbestos	73	23	15	5	0.2	0.1	0.1	(Z)
Other nonmetallic minerals[3]	713	246	182	110	1.6	0.8	0.7	0.5
Chemical and fertilizer minerals[3]	484	169	116	64	1.1	0.6	0.4	0.3
Barite	28	9	5	2	0.1	(Z)	(Z)	(Z)
Fluorspar	28	8	7	3	0.1	(Z)	(Z)	(Z)
Potash	66	16	8	6	0.1	0.1	(Z)	(Z)
Phosphate rock	64	16	13	8	0.1	0.1	0.1	(Z)
Salt	98	43	33	21	0.2	0.1	0.1	0.1
Sulfur and pyrites	127	56	41	19	0.3	0.2	0.2	0.1
Abrasives and miscellaneous materials[3]	229	77	66	46	0.5	0.2	0.3	0.2
Fuller's earth	8	4	3	1	(Z)	(Z)	(Z)	(Z)
High-grade clay	52	18	17	10	0.1	0.1	0.1	(Z)
Feldspar	7	4	3	1	(Z)	(Z)	(Z)	(Z)
Mica sheet	64	20	17	11	0.1	0.1	0.1	0.1
Mica scrap	2	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)	(Z)
Talc and soapstone	12	4	4	2	(Z)	(Z)	(Z)	(Z)
Diamonds:								
Cut, not set	10	9	9	7	(Z)	(Z)	(Z)	(Z)
Rough or uncut	4	1	2	3	(Z)	(Z)	(Z)	(Z)
Industrial	42	6	1	(Z)	0.1	(Z)	(Z)	(Z)

Z Less than $500,000 or, in the percent columns, less than 0.05 percent.

[1] Each detailed materials line shown represents a material or materials group represented by a separate price series in constructing the price indexes.

[2] Represents the weights used in constructing the price indexes.

[3] Represents the total for the group, including materials not represented by individually associated price series. Except for agricultural materials, the extent to which commodities of a group are represented by individually associated price series can be determined by comparing the sum of the detail shown for the group with the total for the group. For agricultural materials such information is not available for the weight base periods shown. However, for domestic agricultural materials such comparisons have been made for 1937-1941 and 1924-1929, using domestic production as weights. Expressed as percents, such coverage measures are:

	1937-1941	1924-1929
All domestic farm products	92.4	93.4
Crops	83.5	88.2
Food grains	99.7	99.5
Oil bearing crops	100.0	96.7
Fruit	67.7	82.6
Commercial vegetables for fresh market	81.4	83.9
Potatoes, sweet potatoes, and dry edible beans	97.7	100.0
Livestock	98.9	98.3
Poultry and eggs	100.0	94.6
Wool	91.9	100.0

[4] An individually associated price series was not used for these periods.

Table B3.--Domestic Agricultural Products Included in the Price Indexes

Materials group and material	Value of material as percent of value of all materials represented in price indexes in 1935-1939
Crops:	
Food grains:	
Wheat	2.7
Rye	(Z)
Rice	0.1
Feed grains and hay:	
Corn	2.3
Oats	0.3
Barley	0.2
Grain sorghums	(Z)
Hay	0.3
Fruit:	
Apples	0.6
Grapefruit	0.2
Lemons	0.2
Oranges	0.6
Peaches	0.3
Pears	0.1
Strawberries	0.4
Potatoes, sweet potatoes, and dry edible beans:	
Potatoes	1.1
Sweet potatoes	0.2
Beans, dry edible	0.3
Commercial vegetables for fresh market:	
Beans, snap	0.3
Broccoli	0.1
Cabbage	0.2
Cantaloupe	0.2
Carrots	0.2
Cauliflower	0.1
Celery	0.3
Cucumbers	0.2
Lettuce	0.5
Onions	0.3
Crops--Continued	
Commercial vegetables for fresh market--Continued	
Peppers, green	0.2
Sweet corn	0.2
Spinach	0.1
Tomatoes	0.7
Watermelons	0.2
Oil bearing crop:	
Cottonseed	0.2
Peanuts	0.4
Flaxseed	0.3
Soybeans	0.5
Cotton:	
American upland	3.4
American-Egyptian	(Z)
Tobacco	1.7
Livestock:	
Dairy products:	
Milk, wholesale	5.2
Milk, retail	1.9
Butterfat in cream	2.3
Meat animals:	
Beef cattle	8.8
Calves	1.2
Hogs	7.1
Sheep	0.2
Lambs	1.2
Poultry and eggs:	
Eggs	3.8
Chickens	1.9
Turkeys	0.5
Wool	1.2

Z Less than 0.05 percent.

Table B4.--Comparison of Segment Price Indexes at the Splicing Points

Item	Indexes on 1935-1939 and 1950-1954 weight bases (1944 = 100.0)		Indexes on 1920-1924 and 1935-1939 weight bases (1929 = 100.0)		Indexes on 1905-1909 and 1920-1924 weight bases (1914 = 100.0)	
	1945	1943	1930	1928	1915	1913
ALL RAW MATERIALS, EXCEPT GOLD AND FISHERY AND WILDLIFE PRODUCTS:						
Early weight base[1]	103.2	98.0	85.9	99.8	97.5	103.0
Later weight base[2]	103.3	98.7	84.5	101.2	97.7	103.9
Agricultural materials:						
Early weight base[1]	104.4	99.3	83.3	100.6	96.6	101.6
Later weight base[2]	104.9	99.6	81.8	101.7	96.5	102.6
Crops:						
Early weight base[1]	101.2	97.1	81.6	105.9	99.3	106.7
Later weight base[2]	101.1	96.5	79.8	106.0	99.3	109.4
Foods:						
Early weight base[1]	100.7	98.0	83.2	106.5	101.4	105.6
Later weight base[2]	100.6	97.6	82.1	106.7	100.8	108.2
Nonfoods:						
Early weight base[1]	102.6	94.5	74.7	103.1	90.5	111.4
Later weight base[2]	102.3	93.9	72.8	103.7	93.1	114.3
Livestock:						
Early weight base[1]	107.4	101.4	84.2	97.4	94.9	98.3
Later weight base[2]	107.8	102.0	83.6	97.7	94.8	98.2
Foods:						
Early weight base[1]	107.6	101.4	84.8	96.9	94.4	98.4
Later weight base[2]	108.1	102.0	84.4	96.9	94.2	98.3
Nonfoods:						
Early weight base[1]	105.0	101.2	78.4	103.5	102.1	96.7
Later weight base[2]	103.9	102.2	75.9	104.4	101.6	96.8
Forest products:						
Early weight base[1]	101.1	92.6	91.7	96.7	97.6	108.1
Later weight base[2]	101.1	92.8	92.3	97.1	97.5	107.8
Minerals, except gold:						
Early weight base[1]	99.8	95.2	92.6	98.3	100.9	104.8
Later weight base[2]	100.2	97.5	90.9	101.0	102.1	107.5
All metals, except gold:						
Early weight base[1]	101.4	102.9	82.4	93.7	120.9	115.9
Later weight base[2]	102.1	103.1	80.2	94.4	129.9	114.8
Iron and ferroalloy ores:						
Early weight base[1]	103.3	106.8	96.8	94.5	106.0	115.7
Later weight base[2]	102.3	105.5	96.2	95.0	110.4	112.7
Other metal ores:						
Early weight base[1]	100.3	100.7	73.8	93.2	135.2	116.1
Later weight base[2]	101.8	100.7	73.2	94.1	140.0	115.9
Mineral fuels:						
Early weight base[1]	102.5	95.6	95.2	99.2	95.0	103.6
Later weight base[2]	101.0	97.0	94.1	97.7	90.6	107.7
Coal:						
Early weight base[1]	105.0	91.9	96.3	103.0	97.6	101.5
Later weight base[2]	104.9	92.0	96.1	103.4	97.4	101.3
Oil and gas:						
Early weight base[1]	100.2	98.9	93.4	93.4	81.5	114.7
Later weight base[2]	99.7	98.7	93.0	94.5	81.4	116.4
Construction materials:						
Early weight base[1]	99.7	97.0	97.5	100.8	101.8	101.1
Later weight base[2]	100.8	97.8	92.6	104.5	100.1	101.6
Other nonmetallic minerals:						
Early weight base[1]	61.3	68.8	94.0	100.4	129.1	86.1
Later weight base[2]	87.3	88.3	74.5	96.0	122.0	80.3
Chemical and fertilizer minerals:						
Early weight base[1]	102.1	98.2	99.4	100.7	131.3	101.0
Later weight base[2]	102.1	98.1	99.4	100.7	115.5	99.9
Abrasives and miscellaneous minerals:						
Early weight base[1]	41.9	54.7	84.8	100.0	127.0	72.2
Later weight base[2]	61.6	71.3	51.9	91.6	128.8	59.7

---

[1] For the years 1913, 1914, and 1915 represents 1905-1909; for years 1928, 1929, and 1930 represents 1920-1924; and for years 1943, 1944, and 1945 represents 1935-1939.

[2] For the years 1913, 1914, and 1915 represents 1920-1924; for years 1928, 1929, and 1930 represents 1935-1939; and for years 1943, 1944, and 1945 represents 1950-1954.

Table B5.--Comparison of Changing Weight and Constant Weight Price Indexes for Selected Years

(1954 = 100.0)

Item	1940	1930	1920	1910	1900
ALL RAW MATERIALS, EXCEPT GOLD AND FISHERY AND WILDLIFE PRODUCTS:					
Changing weight base[1]	37.3	43.5	73.3	33.8	24.7
Constant weight base[2]	39.4	47.4	85.0	37.9	33.5
Agricultural materials:					
Changing weight base[1]	38.5	48.2	75.7	40.4	26.3
Constant weight base[2]	38.4	48.1	77.5	43.4	27.4
Crops:					
Changing weight base[1]	32.5	42.4	77.6	40.2	25.8
Constant weight base[2]	32.1	41.6	75.9	45.8	27.9
Foods:					
Changing weight base[1]	31.6	43.0	74.5	38.6	24.7
Constant weight base[2]	31.0	42.3	70.9	36.3	22.6
Nonfoods:					
Changing weight base[1]	35.1	40.4	89.5	46.2	30.2
Constant weight base[2]	35.2	39.5	90.4	73.0	43.1
Livestock:					
Changing weight base[1]	44.5	53.9	75.8	41.4	27.2
Constant weight base[2]	44.2	53.8	78.9	41.3	27.0
Foods:					
Changing weight base[1]	44.1	54.3	75.4	41.2	27.0
Constant weight base[2]	44.1	54.6	79.7	41.5	27.1
Nonfoods:					
Changing weight base[1]	46.3	48.8	77.4	42.8	29.1
Constant weight base[2]	45.6	43.5	67.8	37.9	25.3
Forest products:					
Changing weight base[1]	32.5	26.8	54.6	16.0	12.8
Constant weight base[2]	33.4	27.4	61.5	17.7	16.0
Minerals, except gold:					
Changing weight base[1]	39.6	42.6	80.3	28.0	28.6
Constant weight base[2]	42.0	49.8	101.0	33.1	46.4
All metals, except gold:					
Changing weight base[1]	45.6	38.0	56.2	38.6	39.1
Constant weight base[2]	46.2	43.4	65.7	44.7	47.0
Iron and ferroalloy ores:					
Changing weight base[1]	43.4	38.4	53.2	34.0	33.3
Constant weight base[2]	43.9	40.0	53.0	36.7	36.1
Other metal ores:					
Changing weight base[1]	47.4	38.2	57.4	40.6	40.7
Constant weight base[2]	48.4	46.8	79.0	53.0	58.3
Mineral fuels:					
Changing weight base[1]	37.4	41.7	86.5	24.4	24.8
Constant weight base[2]	38.7	47.1	109.3	28.8	44.4
Coal:					
Changing weight base[1]	43.0	41.5	73.5	23.2	20.5
Constant weight base[2]	42.8	40.4	79.7	24.5	22.3
Oil and gas:					
Changing weight base[1]	38.4	46.9	118.3	25.2	47.2
Constant weight base[2]	37.8	48.7	116.5	29.9	49.8
Construction materials:					
Changing weight base[1]	54.0	64.8	89.0	34.2	35.8
Constant weight base[2]	55.9	65.6	108.8	35.6	55.2
Other nonmetallic minerals:					
Changing weight base[1]	28.0	34.9	64.0	34.7	42.5
Constant weight base[2]	49.8	81.7	101.0	45.4	55.4
Chemical and fertilizer minerals:					
Changing weight base[1]	57.9	69.2	91.7	54.4	69.7
Constant weight base[2]	58.4	72.5	105.0	53.3	69.6
Abrasives and miscellaneous minerals:					
Changing weight base[1]	13.8	18.6	51.9	25.3	28.6
Constant weight base[2]	35.1	97.3	94.0	32.0	31.0

[1] Represents the indexes shown in Table B1. For 1940 and 1930, the weight base is 1935-1939; for 1920, the weight base is 1920-1924; and for 1910 and 1900, the weight base is 1905-1909.

[2] For all years, the weight base is 1950-1954.

Appendix C.--ENERGY USED AND OTHER INPUT REQUIREMENTS FOR THE MINERAL AND MANUFACTURING INDUSTRIES

The consumption of raw materials reflects in large measure industrial requirements for energy and for the raw components of industrial products. In order to illustrate the changing energy materials and other input requirements for the mineral and manufacturing industries, several statistical measures have been developed for this report:

Fuels and electric energy used for power and heat in terms of the international unit of energy, kilowatt-hours, for all mineral and manufacturing industries (see table C1). Separate figures are included by source of energy for the census years 1909 (manufacturing only), 1919, 1929, 1939, 1947 (manufacturing only), 1954, and 1958. These statistics are based primarily on data collected in the Censuses of Mineral Industries and Manufactures. For 1939, 1947, 1954, and 1958, separate statistics are shown by major industry groups, with figures for these years adjusted to the Standard Industrial Classification (SIC) used in the 1958 censuses. Table C1 summarizes the information available on quantity of fuels and electric energy used for all years for which this information was obtained in the minerals censuses. In addition to the statistics shown for the manufacturing industries, some such information was obtained for manufacturing industries for 1914, 1923, 1927, and 1937. For conversion factors used to develop the energy equivalents, see table C1 (footnote 1). Statistics on the use of energy for all purposes, by detailed types and by broad user groups have been developed in two major reports: William H. Lyon and D. S. Colby, "Production, Consumption, and Use of Fuels and Electric Energy in the United States in 1929, 1939, and 1947," U.S. Department of the Interior, Bureau of Mines, Report of Investigations 4805 (1951) and Perry D. Teitelbaum, "Energy Production and Consumption in the United States: an Analytical Study Based on 1954 Data," U.S. Department of the Interior, Bureau of Mines, and Resources for the Future, Inc., Report of Investigations 5821 (1961). See also annual series for consumption of energy for all purposes by types of energy in table C4.

Indexes of fuels and electric energy use, employment, and production for the mineral and manufacturing industries for the years 1939, 1947, 1954, and 1958 (see table C2). These statistics, as well as those in table C1, are based primarily on data from the Censuses of Mineral Industries and Manufactures and are adjusted to the SIC used in the 1958 censuses. For the manufacturing industries in 1958, however, the production indexes were extrapolated by use of the Federal Reserve Board index of industrial production, since indexes adjusted to the 1958 manufactures census are not yet available. For the mineral industries, roughly comparable indexes to those constructed for the manufacturing industries were obtained by combining series for mineral production developed as the basis of tables A1 and A11 by use of value-added weights. These combinations were made at the 4-digit industry level with value-added weights based on the 1958, 1954, and 1939 Censuses of Mineral Industries[1]. For all mineral industries, for the metal mining industries, and for the nonmetallic minerals (except fuels) mining industries, this method yielded indexes which show differences of some significance from those obtained by use of the same production series without the industry value-added adjustments:

INDEXES OF MINERAL PRODUCTION

(1939 = 100)

Industry group	Industry level value added weights			Unit value of shipments weights		
	1958	1954	1947	1958	1954	1947
All mineral industries..	183	164	147	175	163	147
Metal mining ...	107	112	118	113	119	122
Coal mining....	91	91	150	92	91	150
Oil and gas extraction.....	219	202	152	218	201	151
Nonmetallic minerals mining	298	250	163	274	233	154

---

[1] The formulae used in constructing these indexes may be found in Bureau of the Census, 1954 Census of Manufactures, Vol. IV, "Indexes of Production," p. 16. The cross-weighted index was used for 1958, since value-added data are available for both 1954 and 1958. For 1954, the harmonic mean was used, since only 1954 weights are available for the 1947-1954 period. For 1947, the arithmetic mean was used, since only 1939 weights are available for the 1939-1947 period. In all cases, the production index used to represent an industry was an aggregative index based on the primary products of the industry produced in all industries, with 1954 unit-value weights, as included in the series presented in tables A1 and A11.

Indexes of production per employee, production per horsepower, and productivity for agriculture, the mineral industries, and the manufacturing industries for 1954 relative to 1939 (see table C3). These indexes are based primarily on data from the censuses of agriculture, mineral industries, and manufacturing industries. For the mineral and manufacturing industries the indexes are shown by major industry groups according to the SIC used in the 1954 censuses. The index of productivity was obtained as a weighted arithmetic mean of the indexes of production per employee and production per horsepower as follows:

$$I_n = \frac{I^e_n \; w_n + I^h_n \; (m_n + f_n)}{w_n + m_n + f_n}$$

where I_n = index of productivity for the given year "n" and base year "o"

I^e_n = index of production per employee for the given year "n" and base year "o"

I^h_n = index of production per horsepower for the given year "n" and base year "o"

w_n = wages and salaries for the given year "n"

m_n = capital expenditures for machinery and equipment for the given year "n"

f_n = cost of fuels and purchased electric energy for the given year "n"

Table C1.--Fuels and Electric Energy Used for Power or Heat in the Mineral and Manufacturing Industries, by Source of Energy, Census Years 1909-1958, and by Major Industry Groups, Census Years 1939-1958

(Figures in million kilowatt-hour (kwh) equivalents; for method of conversion to kwh equivalent, see footnote 1. All 1947 and 1909 figures are available only for manufacturing industries)

Code	Major industry group, source of energy, and year	All fuels and purchased electric energy, total	Coal	Coke	Fuel oil	Gas	Other fuels	Fuels not specified by kind	Purchased electric energy
	All mineral and manufacturing industries:								
	Including fuels produced and used......1958..	3,611,121	645,447	379,415	399,029	1,658,735	86,644	172,701	269,150
	1954..	3,321,591	723,324	414,198	433,790	1,444,510	92,353	13,239	200,177
	1939..	1,818,915	669,972	267,257	229,520	568,514	21,473	11,003	51,176
	1929..	2,070,874	1,028,318	392,655	230,639	245,639	9,914	121,900	41,809
	1919..	1,861,590	1,249,639	318,775	131,510	152,031	4,535	5,100	(NA)
	Purchased fuels and electric energy only.................................1958..	2,582,940	640,414	103,483	308,235	1,030,775	58,192	172,691	269,150
	1954..	2,364,593	713,059	120,227	343,280	904,718	69,893	13,239	200,177
	1939..	1,229,898	631,625	80,182	175,522	268,415	11,975	11,003	51,176
	All mineral industries:								
	Including fuels produced and used.........1958..	404,935	18,114	(2)	25,471	306,724	22,853	15,380	16,393
	1954..	372,524	21,207	(2)	27,691	286,639	23,837	...	13,150
	1939..	234,849	54,576	(2)	10,438	150,482	[3]2,821	[4]10,203	6,329
	1929..	255,232	111,331	1,044	6,908	7,857	[3]810	[4]121,900	5,382
	1919..	252,953	197,982	457	16,638	31,826	[3]950	[4]5,100	(NA)
	Purchased fuels and electric energy only...........................1958..	165,205	13,081	(2)	24,360	73,148	22,853	15,370	16,393
	1954..	146,432	10,942	(2)	26,557	71,946	23,837	...	13,150
	1939..	71,392	16,229	(2)	9,328	26,482	[3]2,821	10,203	6,329
10	Metal mining...........................1958..	27,383	8,076	(2)	4,414	8,735	1,420	862	3,876
	1954..	21,087	5,616	(2)	3,438	7,658	1,191	...	3,184
	1939..	14,674	7,424	(2)	1,893	2,703	[3]310	[4]38	2,306
11	Anthracite mining:								
	Including fuels produced and used...........1958..	3,881	2,330	(2)	488	...	408	91	564
	1954..	7,198	5,489	(2)	570	(Z)	408	...	731
	1939..	19,741	18,861	(2)	140	...	[3]149	...	591
	Purchased fuels and electric energy only...1958..	2,303	752	(2)	488	...	408	91	564
	1954..	2,775	1,066	(2)	570	(Z)	408	...	731
	1939..	955	75	(2)	140	...	[3]149	...	591
12	Bituminous coal and lignite mining:								
	Including fuels produced and used...........1958..	14,903	4,146	(2)	3,146	165	1,654	1,440	4,352
	1954..	15,351	6,445	(2)	3,619	156	1,503	...	3,628
	1939..	22,367	19,784	(2)	285	32	[3]243	[4]65	1,958
	Purchased fuels and electric energy only...1958..	11,438	691	(2)	3,146	165	1,654	1,430	4,352
	1954..	9,509	603	(2)	3,619	156	1,503	...	3,628
	1939..	2,806	223	(2)	285	32	[3]243	[4]65	1,958
13	Oil and gas extraction:								
	Including fuels produced and used...........1958..	310,313	(NA)	(2)	9,706	275,161	14,979	6,192	4,275
	1954..	285,096	54	(2)	7,844	259,188	15,262	...	2,748
	1939..	157,837	200	(2)	4,003	142,260	[3]652	[4]10,070	652
	Purchased fuels and electric energy only...1958..	75,626	(NA)	(2)	8,595	41,585	14,979	6,192	4,275
	1954..	69,269	54	(2)	6,710	44,495	15,262	...	2,748
	1939..	32,727	200	(2)	[5]2,893	[5]18,260	[3]652	[4]10,070	652
14	Nonmetallic minerals mining....................1958..	48,455	3,562	(2)	7,717	22,663	4,392	6,795	3,326
	1954..	43,792	3,603	(2)	12,220	19,637	5,473	...	2,859
	1939..	20,230	8,307	(2)	4,117	5,487	[3]1,467	[4]30	822
	All manufacturing industries:								
	Including fuels produced and used.........1958..	3,206,186	627,333	379,415	373,558	1,352,011	63,791	157,321	252,757
	1954..	2,949,067	702,117	414,198	406,099	1,157,871	68,516	13,239	187,027
	1947..	2,605,716	851,149	504,088	359,267	750,050	38,580	...	102,582
	1939..	1,584,006	615,396	267,257	219,082	418,032	18,652	800	44,847
	1929..	1,815,642	916,987	391,611	223,731	237,782	9,104	...	36,427
	1919..	1,608,637	1,051,657	318,318	114,872	120,205	[5]3,585	...	(NA)
	1909..	1,233,058	815,589	293,522	33,674	59,098	[6]31,175	...	(NA)
	Purchased fuels and electric energy energy only...........................1958..	2,417,735	627,333	103,483	283,875	957,627	35,339	157,321	252,757
	1954..	2,218,161	702,117	120,227	316,723	832,772	46,056	13,239	187,027
	1947..	1,915,926	851,149	162,398	284,979	493,028	21,790	...	102,582
	1939..	1,158,506	615,396	80,182	166,194	241,933	9,154	800	44,847
20	Food and kindred products.....................1958..	224,545	66,506	495	43,059	75,038	4,851	18,948	15,648
	1954..	236,020	92,378	777	37,467	85,513	6,522	...	13,363
	1947..	190,502	109,650	1,501	28,183	39,042	2,879	...	9,247
	1939..	151,339	93,038	2,087	20,680	28,453	1,783	...	5,298

See footnotes at end of table.

Table C1.--Fuels and Electric Energy Used for Power or Heat in the Mineral and Manufacturing Industries, by Source of Energy,[1] Census Years 1909-1958, and by Major Industry Groups, Census Years 1939-1958--Continued

(Figures in million kilowatt-hour (kwh) equivalents; for method of conversion to kwh equivalent, see footnote 1. All 1947 and 1909 figures are available only for manufacturing industries)

Code	Major industry group, source of energy, and year	All fuels and purchased electric energy, total	Coal	Coke	Fuel oil	Gas	Other fuels	Fuels not specified by kind	Purchased electric energy
	All manufacturing industries--Continued								
21	Tobacco products..............................1958..	3,356	1,881	...	683	370	95	...	327
	1954..	3,629	2,649	15	475	183	66	...	241
	1947..	4,153	3,754	...	207	19	18	...	155
	1939..	2,964	1,997	23	61	10	7	[7]800	[8]66
22	Textile mill products.........................1958..	66,593	23,538	(2)	12,896	9,913	1,363	6,958	11,925
	1954..	73,763	37,019	175	18,258	6,826	526	...	10,959
	1947..	77,423	48,833	137	18,420	1,705	162	...	8,166
	1939..	65,912	44,427	46	15,297	896	125	...	5,121
23	Apparel and related products..................1958..	9,959	(2)	(2)	(2)	(2)	(2)	8,210	1,749
	1954..	7,870	[9]123	(2)	[9]362	[9]39	[9]10	6,396	940
	1947..	8,836	5,220	38	1,709	878	126	...	865
	1939..	5,739	3,731	23	892	632	98	...	363
24	Lumber and wood products......................1958..	26,443	1,965	(2)	3,902	2,113	2,489	12,572	3,402
	1954..	29,790	6,502	69	6,930	6,300	6,771	...	3,218
	1947..	22,354	6,725	(2)	5,550	998	7,578	...	1,503
	1939..	10,819	6,433	46	1,611	661	1,408	...	660
25	Furniture and fixtures........................1958..	10,032	2,733	(2)	833	986	150	3,941	1,389
	1954..	9,513	5,052	23	1,139	1,980	188	...	1,131
	1947..	10,224	7,808	46	744	841	80	...	705
	1939..	7,265	6,441	23	280	137	95	...	289
26	Paper and allied products.....................1958..	236,444	111,048	(2)	43,161	65,298	2,922	1,477	12,538
	1954..	190,046	96,515	91	38,360	35,879	8,349	...	10,852
	1947..	163,546	114,195	91	20,327	21,690	1,068	...	6,175
	1939..	105,128	79,096	198	11,480	10,214	710	...	3,430
27	Printing and publishing.......................1958..	11,996	(2)	(2)	(2)	(2)	(2)	8,992	3,004
	1954..	8,523	(2)	(2)	(2)	(2)	(2)	6,843	1,680
	1947..	8,183	2,848	30	1,272	2,137	645	...	1,251
	1939..	7,545	3,670	23	1,029	1,509	502	...	812
28	Chemicals and allied products.................1958..	451,882	149,226	(2)	26,824	171,943	5,760	12,568	85,561
	1954..	374,138	154,730	183	27,650	143,528	3,150	...	44,897
	1947..	242,131	137,987	16,082	26,419	49,501	999	...	11,143
	1939..	115,741	71,350	3,192	17,816	17,606	769	...	5,008
29	Petroleum and coal products:								
	Including fuels produced and used...........1958..	682,206	9,212	(2)	96,178	539,867	26,193	1,261	9,495
	1954..	505,962	7,224	76	96,289	379,898	16,622	...	5,853
	1947..	378,904	15,868	...	79,459	268,764	11,666	...	3,147
	1939..	208,391	7,762	663	56,433	136,361	5,591	...	1,581
	Purchased fuels and electric energy only...1958..	273,042	9,212	(2)	6,495	244,454	2,125	1,261	9,495
	1954..	189,470	7,224	76	6,913	168,788	616	...	5,853
	1947..	151,338	15,868	...	5,171	126,932	220	...	3,147
	1939..	49,095	7,762	8	3,545	36,148	51	...	1,581
30	Rubber and plastics products, nec.............1958..	35,948	18,624	(2)	5,225	6,369	350	561	4,819
	1954..	33,021	18,962	8	5,304	4,576	210	...	3,961
	1947..	32,690	23,469	23	3,627	2,514	35	...	3,022
	1939..	19,365	15,385	8	1,363	1,455	9	...	1,145
31	Leather and leather products..................1958..	9,403	3,585	(2)	1,570	593	231	2,648	776
	1954..	8,563	4,683	8	2,071	1,037	119	...	645
	1947..	11,384	9,366	23	1,285	185	50	...	475
	1939..	9,461	8,183	...	673	283	35	...	287
32	Stone, clay, and glass products................1958..	277,539	90,481	1,265	23,302	137,268	3,076	10,058	12,089
	1954..	265,291	104,668	1,455	26,783	120,262	2,966	...	9,157
	1947..	239,758	130,394	2,819	25,057	74,455	1,168	...	5,865
	1939..	160,352	96,077	1,021	13,694	45,731	888	...	2,941
33	Primary metal industries:								
	Including fuels produced and used...........1958..	898,584	86,942	374,958	80,371	294,263	9,032	2,355	50,663
	1954..	947,885	79,618	405,849	96,746	307,106	11,127	...	47,439
	1947..	999,410	124,544	471,079	111,387	250,733	9,473	...	32,194
	1939..	603,118	110,126	254,449	61,363	158,941	6,081	...	12,158
	Purchased fuels and electric energy only...1958..	519,297	86,942	99,026	80,371	195,292	4,648	2,355	50,663
	1954..	533,471	79,618	111,878	96,746	193,117	4,673	...	47,439
	1947..	537,186	124,544	129,389	111,387	135,543	4,129	...	32,194
	1939..	336,854	110,126	68,029	61,363	83,055	2,123	...	12,158

See footnotes at end of table.

Table C1.--Fuels and Electric Energy Used for Power or Heat in the Mineral and Manufacturing Industries, by Source of Energy, Census Years 1909-1958, and by Major Industry Groups, Census Years 1939-1958--Continued

(Figures in million kilowatt-hour (kwh) equivalents; for method of conversion to kwh equivalent, see footnote 1. All 1947 and 1909 figures are available only for manufacturing industries)

Code	Major industry group, source of energy, and year	All fuels and purchased electric energy, total	Coal	Coke	Fuel oil	Gas	Other fuels	Fuels not specified by kind	Purchased electric energy
	All manufacturing industries--Continued								
34	Fabricated metal products......................1958..	55,562	7,831	1,135	10,500	15,151	1,002	12,817	7,126
	1954..	52,679	13,281	1,821	11,304	19,155	1,171	...	5,947
	1947..	47,489	19,469	4,075	9,573	10,143	490	...	3,739
	1939..	28,807	14,717	2,209	5,246	4,926	134	...	1,575
35	Machinery, except electrical..................1958..	61,606	12,406	922	6,396	7,853	1,261	25,166	7,602
	1954..	62,192	21,653	1,868	11,212	15,363	5,592	...	6,504
	1947..	53,633	26,961	3,817	8,923	8,811	571	...	4,550
	1939..	30,383	18,855	2,072	4,803	3,177	110	...	1,366
36	Electrical machinery..........................1958..	41,171	7,431	46	4,006	5,864	969	15,167	7,688
	1954..	36,807	14,114	196	6,389	8,917	1,299	...	5,892
	1947..	33,563	19,247	1,577	4,510	4,420	202	...	3,607
	1939..	18,105	11,984	206	2,298	2,310	68	...	1,239
37	Transportation equipment......................1958..	77,765	29,480	594	12,611	17,161	3,398	1,146	13,375
	1954..	73,647	32,374	1,508	11,422	14,061	3,164	...	11,118
	1947..	64,831	34,792	2,636	8,975	11,632	1,244	...	5,552
	1939..	21,169	14,548	838	2,036	2,500	201	...	1,046
38	Instruments and related products..............1958..	9,367	3,316	(2)	259	183	203	4,323	1,083
	1954..	7,989	4,092	15	1,518	1,490	146	...	728
	1947..	4,905	2,956	15	968	486	24	...	456
	1939..	3,740	1,382	61	447	1,694	11	...	145
39 19	Miscellaneous manufacturing, including ordnance.....................................1958..	15,785	1,128	(2)	1,782	1,778	446	8,153	2,498
	1954..	21,739	6,480	61	6,420	5,758	518	...	2,502
	1947..	11,797	7,063	99	2,672	1,096	102	...	765
	1939..	8,723	6,194	69	1,580	536	27	...	317

Source: U.S. Department of Commerce, Censuses of Mineral Industries for 1958, 1954, 1939, 1929, and 1919; Censuses of Manufactures for 1958, 1954, 1947, 1939, 1929, 1919, and 1909.

Z Less than 0.5 million kwh equivalent.

[1] Reported quantity or value statistics were reduced to kilowatt-hour equivalents, the international unit of energy, by use of the following factors for purchased fuels: Coal, 1 ton = 7,677 kwh (except for Major Group 11 in all years, and for all mineral industries in 1939, for Anthracite, 1 ton = 7,443 kwh); Coke, 1 ton = 7,618 kwh; Fuel oil, 1 barrel = 1,707 kwh; Natural gas, 1 MCF = 307.7 kwh; Manufactured gas, 1 MCF = 158.2 kwh (for 1947 and 1939 only); Other fuels, $1 = 239 for manufactures in 1958, 250 for mineral industries in 1958 and for all industries in 1954 and 1947, 380 for 1939, and 330 for 1929; Undistributed fuels costs, based on the types of fuels used in 1958 or 1954 in the industry for which the undistributed costs were tabulated. For fuels produced and used at the same establishment, the following factors were used: Residual fuels, 1 barrel = 1,842 kwh; Still gas, 1 MCF = 439.8 kwh; Acid sludge and other refinery fuels, 1 barrel = 1,382 kwh; Coke, 1 ton = 7,618 kwh; Coke oven gas, 1 MCF = 161.2 kwh; Crude tar, 1 gallon = 43.97 kwh.

[2] Included with figures for "Fuels not specified by kind."

[3] Represents gasoline and kerosene only.

[4] Estimated to represent energy used by establishments for which such data were not collected; in 1939 and earlier years, all contract service establishments; for 1929, all crude petroleum and natural gas and natrual gas liquids operations; for 1929 and 1919, to include such common clay and shale operations; and for 1919, to include such sand and gravel operations.

[5] Figures for fuels produced and used included in the total were partially estimated.

[6] Represents wood only. Figures for gasoline are included with those for "Fuel oil."

[7] Represents the estimated total energy equivalent of fuels and electric energy used for "Tobacco stemming and redrying."

[8] Estimated figures for "Tobacco stemming and redrying" are included under "Fuels not specified by kind."

[9] Principally included with figures for "Fuels not specified by kind."

Table C2.--Indexes of Fuels and Electric Energy Use, Employment, and Production for the Mineral and Manufacturing Industries, by Major Industry Groups: Census Years 1939-1958

(Adjusted to the Standard Industrial Classification as used in the 1958 Censuses of Mineral Industries and Manufactures)

Industry group and year	Fuels and electric energy used		Employment[2]		Production index[4]
	Billion kwh equivalent[1]	Index (1939 = 100)	Average for year[3] (thousands)	Index (1939 = 100)	(1939 = 100)
All mineral and manufacturing industries...1958..	3,610.9	199	16,126.4	155	233
1954..	3,321.6	183	16,431.2	158	217
1947..	(NA)	(NA)	(NA)	(NA)	171
1939..	1,818.9	100	10,430.1	100	100
All mineral industries.........................1958..	404.9	172	732.6	87	183
1954..	372.5	159	785.7	94	164
1947..	(NA)	(NA)	(NA)	(NA)	147
1939..	234.8	100	839.7	100	100
Metal mining.......................................1958..	27.4	186	92.5	92	107
1954..	21.1	144	100.2	100	112
1947..	(NA)	(NA)	(NA)	(NA)	118
1939..	14.7	100	100.1	100	100
Coal mining..1958..	18.8	45	210.5	44	91
1954..	22.5	53	256.3	53	91
1947..	(NA)	(NA)	(NA)	(NA)	150
1939..	42.1	100	479.4	100	100
Oil and gas extraction.............................1958..	310.3	197	312.8	168	219
1954..	285.1	181	315.7	170	202
1947..	(NA)	(NA)	(NA)	(NA)	152
1939..	157.8	100	186.2	100	100
Nonmetallic minerals mining........................1958..	48.5	240	116.8	158	298
1954..	43.8	217	113.4	153	250
1947..	(NA)	(NA)	(NA)	(NA)	163
1939..	20.2	100	74.0	100	100
All manufacturing industries...................1958..	3,206.0	202	15,393.8	161	239
1954..	2,949.1	186	15,645.5	163	223
1947..	2,605.7	164	14,306.4	149	174
1939..	1,584.1	100	9,590.4	100	100
Food and kindred products..........................1958..	224.5	148	1,698.8	150	182
1954..	236.0	156	1,686.7	149	169
1947..	190.5	126	1,494.0	132	154
1939..	151.3	100	1,128.8	100	100
Tobacco products...................................1958..	3.4	113	84.5	68	182
1954..	3.6	120	94.9	76	162
1947..	4.2	140	111.8	89	150
1939..	3.0	100	125.1	100	100
Textile mill products and Apparel and related products..1958..	77.3	108	2,082.2	104	141
1954..	81.6	114	2,217.9	110	136
1947..	86.3	120	2,305.6	115	125
1939..	71.7	100	2,008.1	100	100
Lumber and wood products and Furniture and fixtures..1958..	36.5	202	928.9	126	168
1954..	39.3	217	986.6	134	160
1947..	32.6	180	958.4	130	138
1939..	18.1	100	733.6	100	100
Paper and allied products..........................1958..	236.3	224	555.4	172	220
1954..	190.0	180	527.7	163	193
1947..	163.5	154	449.9	139	147
1939..	105.1	100	322.9	100	100
Printing and publishing............................1958..	12.0	160	864.1	156	210
1954..	8.5	113	803.5	145	181
1947..	8.2	109	715.4	130	144
1939..	7.5	100	552.3	100	100
Chemicals and allied products......................1958..	451.9	391	699.2	197	453
1954..	374.1	323	693.9	195	365
1947..	242.1	209	590.6	166	221
1939..	115.7	100	355.5	100	100
Petroleum and coal products........................1958..	682.2	327	179.2	150	216
1954..	506.0	243	183.3	153	202
1947..	378.9	182	173.1	145	154
1939..	208.4	100	119.6	100	100
Rubber and plastics products, nec..................1958..	35.9	185	347.8	208	341
1954..	33.0	170	338.5	203	313
1947..	32.7	169	319.2	191	219
1939..	19.4	100	167.1	100	100

See footnotes at end of table.

Table C2.--Indexes of Fuels and Electric Energy Use, Employment, and Production for the Mineral and Manufacturing Industries, by Major Industry Groups: Census Years 1939-1958--Continued

Industry group and year	Fuels and electric energy used		Employment[2]		Production index[4]
	Billion kwh equivalent[1]	Index (1939 = 100)	Average for year[3] (thousands)	Index (1939 = 100)	(1939 = 100)
All manufacturing industries--Continued					
Leather and leather products........................1958..	9.4	99	349.0	97	111
1954..	8.6	91	356.6	99	104
1947..	11.4	120	383.3	107	115
1939..	9.5	100	359.4	100	100
Stone, clay, and glass products.....................1958..	277.0	173	554.0	178	234
1954..	265.3	165	491.8	158	211
1947..	239.8	150	462.1	148	170
1939..	160.4	100	311.5	100	100
Primary metal industries............................1958..	897.7	149	1,096.4	134	204
1954..	947.9	157	1,169.3	143	198
1947..	999.4	166	1,221.3	149	192
1939..	603.1	100	819.2	100	100
Fabricated metal products...........................1958..	55.6	193	1,058.0	187	235
1954..	52.7	183	1,060.4	187	226
1947..	47.5	165	1,010.6	178	198
1939..	28.8	100	566.5	100	100
Machinery...1958..	102.8	212	2,470.5	251	374
1954..	99.0	204	2,441.7	248	360
1947..	87.2	180	2,282.4	232	273
1939..	48.5	100	984.5	100	100
Transportation equipment............................1958..	77.8	367	1,557.8	246	409
1954..	73.6	347	1,705.5	270	382
1947..	64.8	306	1,181.7	187	202
1939..	21.2	100	632.8	100	100
Instruments and related products and Miscellaneous manufacturing, including ordnance..................1958..	25.7	206	868.0	215	322
1954..	29.7	238	887.2	220	298
1947..	16.7	134	647.0	160	174
1939..	12.5	100	403.5	100	100

NA Not available.

[1] For source and method of computing kwh equivalents, see table C1, footnote 1.

[2] For the Mineral Industries (where employees at central administrative offices amounted to 5.7 percent of total employment in 1958 and 4.3 percent in 1954) figures for central administrative offices are included in all years. For the Manufacturing Industries (where such offices amounted to 3.8 percent in 1958 and 2.8 percent in 1954) such offices are excluded for all years.

[3] Source: U.S. Department of Commerce, Censuses of Mineral Industries for 1958, 1954, and 1939, and Censuses of Manufactures for 1958, 1954, 1947, and 1939.

[4] For the Manufacturing Industries for 1954, 1947, and 1939, based on statistics in the Index of Production volumes for the 1954 and 1947 Censuses of Manufactures, and for 1958, on the Federal Reserve Board Index of Industrial Production for these industries. For the Mineral Industries similar production indexes were constructed, by using indexes for the major products of each 4-digit SIC industry as indicated by the series shown in Appendix A, table A11, of this report and combining them by means of value added weights based on the 1958, 1954, and 1939 Censuses of Mineral Industries.

Table C3.--Indexes of Production Per Employee, Production Per Horsepower, and Productivity for Agriculture, Mineral, and Manufacturing Industries, by Major Industry Groups: 1954

(Adjusted to the Standard Industrial Classification used in the 1954 Censuses of Mineral Industries and Manufactures)

Industry group	Production index[1] (1939=100)	Employment index[2] (1939=100)	Horsepower index[2] (1939=100)	Wages and salaries 1954[2] (million dollars)	Capital expenditures for machinery and equipment 1954[2] (million dollars)	Cost of fuels and purchased electric energy 1954[2] (million dollars)	Production per employee index (1939=100)	Production per horsepower index (1939=100)	Productivity index (1939=100)
Agriculture	141	76	275	12,440	536	500	186	51	176
All mineral industries	164	94	291	3,385	1,102	366	174	56	138
Metal mining	112	100	226	463	72	60	112	50	98
Coal mining	91	53	176	1,010	88	78	172	52	155
Oil and gas extraction	202	170	394	1,462	838	132	119	51	92
Nonmetallic minerals mining	250	153	353	450	104	96	163	71	135
All manufacturing industries	223	163	217	62,993	5,949	4,925	137	103	132
Food and kindred products	168	152	147	6,202	608	419	111	114	111
Tobacco manufactures	162	76	191	260	24	8	213	85	199
Textile mill products and Apparel and related products	136	111	125	6,234	283	232	123	109	122
Lumber and wood products and Furniture and fixtures	160	134	171	3,131	221	130	119	94	116
Pulp, paper, and products	193	163	200	2,217	414	311	118	96	113
Printing and publishing	181	146	126	3,625	197	52	124	144	125
Chemicals and products	354	193	381	3,407	727	621	183	93	157
Petroleum and coal products	202	152	310	1,102	293	185	133	65	112
Rubber products	207	166	187	1,059	114	57	125	111	123
Leather and leather products	104	99	110	1,027	21	24	105	95	105
Stone, clay, and glass products	211	158	159	1,938	227	370	134	133	134
Primary metal products	198	145	193	5,097	621	1,716	137	103	126
Fabricated metal products	226	185	281	4,397	359	160	122	80	118
Machinery, except electrical	310	219	280	7,191	569	218	142	111	139
Electrical machinery	472	300	247	3,951	263	101	157	191	160
Transportation equipment	382	271	309	8,296	791	218	141	124	139
Instruments and related products and Miscellaneous manufactures	344	231	511	3,859	217	103	149	67	143

---

[1] For sources of these indexes for the mineral and manufacturing industries, see table C2, footnote 4. The figure for agriculture is computed from the aggregate figures for production of agricultural materials in Appendix A, table A1.

[2] Source: U.S. Department of Commerce, Censuses of Mineral Industries and Manufactures 1954 and 1939 and Census of Agriculture 1954 and 1940, and U.S. Department of Agriculture, Agricultural Marketing Service series. For Agriculture, the employment figures include family workers and hired workers. (Family workers for agriculture amounted to 76.2 percent of all workers in 1954. For the mineral and manufacturing industries proprietors are not included. In 1954 in the mineral industries, proprietors represented 4.8 percent of all persons engaged and working proprietors 2.5 percent. For the same year in the manufacturing industries, proprietors represented 1.2 percent of all persons engaged.) Wages and salaries for agriculture were estimated by use of U.S. Bureau of Labor Statistics figures for wage rates per month. Figures for capital expenditures for farm machinery and equipment and cost of fuels and electric energy were partly estimated on the basis of statistics from the above sources.

Table C4.--Consumption of Energy in the United States Measured in Billion Kilowatt-Hour Equivalents, by Source of Energy: 1900-1961

Year	All energy sources	Mineral fuels						Fuel wood	Hydro energy
		Total	Bituminous coal	Anthracite	Crude petroleum	Natural gas	Natural gas liquids		
1961	13,346.1	12,972.1	2,801.6	119.2	5,527.5	4,077.3	446.5	216.5	157.5
1960	13,202.3	12,822.6	2,911.1	129.4	5,407.9	3,953.4	420.8	226.0	153.7
1959	12,860.0	12,474.0	2,884.2	140.4	5,325.9	3,725.7	397.8	241.2	144.8
1958	12,167.8	11,793.0	2,766.8	140.6	5,119.2	3,399.8	366.6	227.9	146.9
1957	12,477.4	12,108.0	3,194.0	156.2	5,130.6	3,261.7	365.5	232.4	137.0
1956	12,458.8	12,072.7	3,319.4	176.0	5,138.2	3,075.9	363.2	256.3	129.8
1955	11,777.0	11,395.8	3,174.7	171.5	4,830.6	2,868.9	350.1	260.9	120.3
1954	10,727.9	10,354.1	2,769.3	195.2	4,414.5	2,661.6	313.5	259.8	114.0
1953	11,145.7	10,762.2	3,252.1	210.3	4,442.7	2,558.7	298.4	271.9	111.6
1952	10,853.9	10,455.6	3,219.4	268.0	4,248.7	2,440.1	279.4	286.3	112.0
1951	10,964.1	10,565.1	3,659.3	273.4	4,121.1	2,254.1	257.2	292.4	106.6
1950	10,310.7	9,911.5	3,772.4	299.2	3,720.7	1,889.0	230.2	296.5	102.7
1949	9,032.3	8,616.6	3,148.8	281.1	3,369.1	1,622.7	194.9	319.3	96.4
1948	10,309.6	9,900.3	4,247.5	375.7	3,557.6	1,537.1	182.4	320.8	88.5
1947	9,790.0	9,386.9	4,308.7	362.3	3,188.2	1,364.8	162.9	318.1	85.0
1946	8,915.8	8,516.7	3,772.8	402.0	2,958.5	1,238.4	145.0	313.6	85.5
1945	9,203.7	8,796.7	4,212.8	381.5	2,843.4	1,215.4	143.6	319.7	87.3
1944	9,374.7	8,963.8	4,556.9	442.9	2,687.6	1,147.5	128.9	329.5	81.4
1943	8,762.6	8,357.2	4,331.9	421.8	2,428.9	1,061.0	113.6	323.8	81.6
1942	8,412.9	8,003.4	4,295.6	416.9	2,238.8	944.4	107.7	337.9	71.6
1941	7,985.6	7,534.7	3,788.1	395.1	2,386.6	860.2	104.7	393.2	57.7
1940	7,360.8	6,908.1	3,410.6	364.4	2,241.5	803.7	87.9	398.9	53.8
1939	6,535.7	6,072.8	2,942.9	366.3	1,950.5	738.2	74.9	413.3	49.6
1938	5,994.3	5,532.3	2,595.4	331.5	1,846.7	689.5	69.2	411.8	50.2
1937	6,938.3	6,482.1	3,321.9	374.5	1,995.8	721.7	68.2	406.1	50.1
1936	6,613.8	6,154.4	3,290.1	398.2	1,756.5	649.5	60.1	414.8	44.6
1935	5,835.3	5,372.2	2,783.9	380.3	1,579.5	574.0	54.5	419.0	44.1
1934	5,584.6	5,116.2	2,670.3	419.4	1,445.7	530.9	49.9	430.4	38.0
1933	5,278.5	4,801.3	2,488.6	364.5	1,444.9	458.2	45.1	439.1	38.1
1932	4,947.3	4,483.9	2,306.6	365.9	1,292.8	468.3	50.3	426.2	37.2
1931	5,668.2	5,231.4	2,837.4	435.2	1,389.9	508.5	60.4	402.0	34.8
1930	6,503.8	6,079.9	3,464.2	502.3	1,451.6	589.7	72.1	386.4	37.5
1929	7,191.7	6,782.3	3,972.1	527.8	1,629.6	580.4	72.4	370.5	38.9
1928	6,617.3	6,210.2	3,719.8	538.6	1,427.7	465.5	58.6	367.8	39.3
1927	6,721.1	6,318.8	3,837.7	572.3	1,423.5	432.5	52.8	367.8	34.5
1926	6,805.1	6,408.5	4,131.6	604.4	1,233.6	395.0	43.9	364.8	31.8
1925	6,344.7	5,937.0	3,859.8	439.3	1,246.1	355.5	36.3	380.3	27.4
1924	6,179.7	5,765.2	3,584.2	625.5	1,183.1	342.4	30.0	389.1	25.4
1923	6,833.8	6,415.8	4,176.6	659.0	1,251.0	302.9	26.3	393.2	24.8
1922	5,304.4	4,877.6	3,183.2	388.9	1,058.4	230.8	16.3	404.6	22.2
1921	5,228.5	4,784.1	3,023.4	638.4	907.2	200.6	14.5	424.7	19.7
1920	6,216.3	5,766.1	4,073.1	626.8	810.4	243.4	12.4	428.9	21.3
1919	5,364.1	4,915.5	3,424.9	619.0	632.9	227.4	11.3	430.4	18.2
1918	6,219.3	5,763.1	4,274.1	698.7	560.2	221.0	9.1	439.1	17.1
1917	5,966.9	5,515.7	4,053.9	696.7	514.7	243.4	7.0	434.6	16.6
1916	5,449.2	4,990.6	3,700.7	616.9	438.6	231.1	3.3	443.3	15.3
1915	4,953.8	4,503.1	3,262.4	632.7	413.4	192.5	2.1	436.8	13.9
1914	4,811.3	4,349.3	3,136.0	644.1	387.1	180.7	1.4	449.0	13.0
1913	5,163.1	4,705.3	3,525.9	646.4	354.9	177.3	0.8	445.9	11.9
1912	4,879.1	4,418.2	3,340.7	597.0	310.1	170.1	0.3	450.1	10.8
1911	4,580.6	4,106.1	3,001.4	643.5	304.9	156.1	0.2	464.5	10.0
1910	4,646.0	4,173.9	3,121.0	603.6	295.2	154.1	...	463.0	9.1
1909	3,968.7	3,503.6	2,530.8	579.4	247.4	146.0	...	456.9	8.2
1908	3,909.9	3,443.8	2,484.4	596.8	240.4	122.2	...	458.8	7.3
1907	4,387.8	3,920.6	2,953.3	614.7	229.0	123.6	...	460.7	6.5
1906	3,838.5	3,368.6	2,575.9	512.1	162.8	117.8	...	464.1	5.8
1905	3,690.2	3,215.2	2,370.5	559.7	178.7	106.3	...	469.8	5.2
1904	3,355.7	2,873.8	2,096.2	526.5	156.6	94.5	...	477.4	4.5
1903	3,391.2	2,904.9	2,142.9	539.9	131.7	90.4	...	482.3	4.0
1902	2,957.0	2,466.7	1,972.9	301.5	106.7	85.6	...	486.9	3.4
1901	2,835.7	2,340.9	1,701.8	485.5	73.3	80.3	...	491.8	3.0
1900	2,642.9	2,143.3	1,590.7	413.0	67.4	72.2	...	496.8	2.8

Source: The quantity figures for mineral fuels and fuel wood are the same as those used as a basis for appendix A, tables A4, A5, and A11 and described in appendix A. The figures for hydro energy are primarily based on Federal Power Commission data. Consumption figures in physical units were converted to kilowatt-hour equivalents, the international unit of energy, by use of the following conversion factors: Bituminous coal, 1 ton = 7,677 kwh; Anthracite, 1 ton = 7,443 kwh; Crude petroleum, 1 barrel = 1,700 kwh; Natural gas, 1 MCF = 307.7 kwh; Natural gasoline, 1 gallon = 32.23 kwh; Liquefied petroleum gas, 1 gallon = 27.98 kwh; Fuel wood, 1 cord = 5,688 kwh.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1964 O—720-131

PENN STATE UNIVERSITY LIBRARIES
A000070962239